

GENERAL 'E'DUCATION



Report of the Study Team



Ministry of Education-1957
Government of India



सत्यमेव जयते

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CHAPTER I

Introduction

The University Education Commission of 1948-49 has devoted some sections to General Education (Chapter V-Sections 3 to 13) in its report. The Commission dealt with the effects of over-specialisation and stressed the need for a well-balanced education. After dealing with the place of General Education in secondary schools, they went on to say that "General Education should continue into the more mature years of the student's life. It should aim at making him familiar with his physical and social environments, and with human institutions, aspirations and ideals." The report recommends "that without unnecessary delay the principles and practice of General education be introduced, so as to correct the extreme specialization which now is common in our intermediate and degree programmes; that the relations of general and special education be worked out for each field, keeping in mind the general interests of the student as a personality and a citizen, and his special occupational interest."

These remarks in the report of the Commission, dealing with University Education in India in a very comprehensive manner, touch upon an important aspect which, if neglected, is likely to result in our educational expansion becoming inadequate and lop-sided. Individuals as well as educational institutions, while considering the several recommendations made by the Commission, repeatedly stressed the need for paying some attention to this aspect and therefore for broadbasing our curricula (taking into account the general principles enunciated as above) while re-organising our college courses. It may be said that in about three to four years after the publication of the Commission's Report, i.e. since 1953, a feeling in favour of introducing an element of General education into college curricula began to be fairly widely expressed. Some Universities even started experimenting on a small scale. Since then, the question has also been actively engaging the attention of the Government of India in the Ministry of Education.

Moreover, the problem of balancing specialised studies with an element of General education was already an acknowledged issue in the universities abroad and had received considerable attention in the educational set-up of countries like the U.S.A. and the U.K., in the post-war years. This fact added further incentive to our own efforts and impelled us to take more active and tangible steps in recent years in the direction of introducing General education courses in Indian universities.

The Government of India in the Ministry of Education arranged at Srinagar in June 1955, a conference of a few Vice-Chancellors to consider a scheme of a General Course of Education for students which will cut across some of the current divisions among the different subjects. At this Conference, a Consultative Committee was formed and the Committee discussed the desirability of introducing General education courses in Indian universities. A note on the "Indo-American Curricular Project in General Education" prepared by Dr. Ward of the Ford Foundation was also considered by the Committee and several agreed recommendations made.

Some of the important recommendations made by this Committee are :

The object of the General education courses is to remedy the lack of balance and undue specialisation which characterise the courses in colleges at present with the result that students who study natural sciences are usually ignorant of the broad issues and basic ideas pertaining to social, economic and cultural life, and those who study humanities or social sciences know little or nothing of natural sciences, or about their impact on present-day life and their contribution to techniques of modern thinking and living. It is, therefore, necessary that the General Education Course should cover the basic elements in the three broad fields of humanities, social sciences and natural sciences.

Such courses in General education should be introduced not only in arts and science colleges, but also in technical and professional institutions like the Mining and Engineering colleges where this need is equally imperative.

The universities are likely to appoint committees in the near future to formulate the new three-year degree courses. These Committees should also take into consideration the question of integrating General education courses into the curriculum. In fact, the time is now appropriate and ripe for consideration of such issues because a critical revision of the present curriculum content would become possible when we sit down to formulate the new curriculum.

They further recommended that the Central Government should appoint a Committee of about six to nine persons mainly drawn from the universities, which are specially interested in, and conversant with, the problems of General education and who amongst themselves would represent the three main fields of humanities, social sciences and physical sciences.

In July 1955, a circular letter was sent out from the Ministry of Education to the Vice-Chancellors of all universities in India along with the proceedings of the Consultative Committee that met in Srinagar and with a note on the objectives and scope of General education courses as envisaged by the Committee. They were requested to communicate the views of their respective universities on the suggestions made in the

proceedings of the Consultative Committee. They were also requested to make a beginning, if possible, with General education courses that very year if possible, and the Ministry agreed to give financial assistance where necessary.

The replies received from various Indian universities to this circular letter exhibited a favourable reaction on the whole to the proposals put forward by the Consultative Committee, in principle if not in detail. There was wide agreement on the need for introducing such courses at this juncture; many were even willing to make a modest beginning forthwith and some asked for detailed suggestions on the lines on which they might revise their curricula.

A brief reference should be made here to the observations of one or two universities. They felt that the introduction of such new courses might result in the overloading of the students' study schedule at the degree level, thereby impairing efficiency in regard to specialised training in chosen areas. Some Vice-Chancellors also raised the question whether the appropriate place for such education is at the Higher Secondary stage, or at the first degree stage but the recommendations of the University Education Commission, we feel, meet the points raised in this regard.

The Government appointed the present General Education Study Team, consisting of the following members :

Natural Sciences

1. Dr. S. Bhagavantam,
Vice-Chancellor, Osmania University. (Convener)
2. Dr. P. Maheshwari,
Dean of the Faculty of Science, Delhi University.
3. Dr. S.M. Sethna,
Head of the Chemistry Department, M.S. University of Baroda.

Social Sciences

4. Dr. K.S. Murty,
Head of the Department of Philosophy, Andhra University.
5. Prof. G.D. Parikh,
Professor of Economics, Bombay University.
6. Dr. Baljit Singh,
Head of the Department of Economics and Sociology,
Lucknow University.

Humanities

7. Professor Umashankar Joshi,
Director of the Department of Gujrati Language and
Literature, Gujarat University.
8. Mr. Mahmud Hosain,
Registrar, Aligarh Muslim University.

The Team foregathered for about a week at Aurangabad and the members held discussions amongst themselves and with Shri K.G. Saiyidain and Dr. F.C. Ward. On March 25, 1956, an *aide-memoire* was prepared by Shri Saiyidain and handed over to the Team. This is reproduced in full as Appendix I to this Report. The main points which served as our terms of reference, are as follows :

"The team should study critically the working of General Education courses in the various institutions of the U.S.A. and U.K. in order to find out what approaches to the problem have proved most effective.

In the light of the conditions prevailing in the Indian Universities they should suggest suitable approaches, which may be tried out in our country.

They should work out the approximate financial implications of their proposals with due regard to the limitations of financial resources under which the scheme will have to be implemented."

The Team spent eight weeks in the U.S.A. and visited Columbia University, Amherst College, Harvard University, Massachusetts Institute of Technology, Yale University, University of Chicago, University of Wisconsin and Oberlin College. In the U.K., the North Staffordshire College at Keele was visited and the total stay including the period spent at Oxford for writing the report was about six weeks. At Oberlin, a Seminar on General Education was held in which the Indian Team and representatives of American institutions participated. At other places, the Team made an intensive and critical study of the General education programmes. This was done by observing lectures and group discussions, and studying reading materials as well as taking part in personal talks and conferences. At all these places the Heads of Institutions, Deans and other members of the staff helped us a great deal by giving us all the facilities necessary for getting an insight into the problem and the Team places on record its gratitude to and appreciation of all these institutions and individuals.

It may be mentioned here that the Report is subject to certain obvious limitations as we could visit and look into the working of only a few institutions engaged in General education and nothing more could possibly have been expected in an initial and essentially exploratory attempt of this kind.

During the period of the Team's stay in the U. S. A., Prof. D. N. Bigelow of the Brandeis University acted as host on behalf of the Ford Foundation and for its stay in the U.K., Dr. A. M. D'Rozario, Secretary, Education Department, Office of the High Commissioner for India in U.K. was in charge of the arrangements. To both these gentlemen, the members of the Team express their thanks.

CHAPTER II

The Scope and Purpose of General Education

We propose to discuss in this chapter the nature and scope of General education and comment briefly on its relevance and need in the peculiar context of the conditions in our country. We would also refer, in broad terms, to some of the curricular and organisational implications of adoption of General education programmes as part of education imparted in our colleges and universities. A more detailed discussion of these aspects will however follow in later chapters of the report.

The numerous experiments in General education carried on in the American universities and colleges, only a few of which we could actually study, collectively constitute a movement in the field of Higher education in that country. These experiments often differ from one another in several material particulars like curricular content, methods of instruction, modes of examination and so on. On occasions even their underlying philosophical premises differ "ranging from rationalism at the conservative end of the continuum through neo-humanism to instrumentalism at the liberal end." But they still have a common basis in the more meaningful realisation on the part of the universities and the colleges of the responsibility they owe to the students they educate and to the society at large, to the shaping of which they contribute, among other ways, through such education. The experiments apparently seem to have little to do with each other. They seem to express, to some extent at any rate, the differing "ethos" of the different universities. Initially they even tend to convey the impression that General education is a vague and amorphous thing, that it means different things to different people, that it is some kind of an "airy education in knowledge in general" or perhaps "education for all in the sense of universal education." This may perhaps also explain the fact that some of the institutions while being actually engaged in working out what could well be described as General education programmes, tend to avoid the use of that designation, and insist on the individual identity of their specific programme.

The peculiar conditions obtaining in the field of Higher education in the United States, such as the existence of institutions of a large variety of types and levels, the phenomenal growth in the number of students entering their portals, over-specialisation and the continual

"splintering" of the curriculum and the enormous growth in the number of courses offered by the colleges and the universities, the system of "credits" and the excesses of the "elective" system—all these have tended to intensify the search for some kind of unity in instruction. But the two broad reasons for the emergence of the afore-mentioned realisation of responsibility seemed to have been the enormous growth in knowledge and the development of an increasingly complex technological society. The former seems to render any form of synthetic understanding more and more difficult and thus tends continually to widen the gap between education and life. The latter, on the other hand, has tended to pose problems, for which none of the specialities, fostered by education could possibly supply any satisfactory answers.

Dealing with what they describe as a "widespread and surely an ancient concern", the authors of the Harvard Report write: "Why has this concern become so strong in late years? Among many reasons, three stand out: the staggering expansion of knowledge produced largely by specialism and certainly conducing to it; the concurrent and hardly less staggering growth of our educational system with its maze of stages, functions and kinds of instructions; and not the least the ever-growing complexity of society itself. It is hard to say whether the effect of these changes has been chiefly to estrange future citizens from one another because of the very different background and form of training from which they take up different parts in life, or, because such masses of students have been involved, whether it has not been rather toward a stiff uniformity cramping the individual's best development. Certainly both forces have been at work. The question has therefore become more and more insistent: what then is the right relationship between specialistic training on the one hand, and education towards a common heritage and a common citizenship on the other? It is not too much to say that the very character of our society will be affected by the answer to that question"¹. The movement of General education seems to be the answer in the process of actually being worked out through numerous experiments. It has certain common and well-defined objectives and therefore a definite and identifiable direction. These elements have been combined with a large measure of flexibility regarding the means which perhaps accounts for the manifold differences in the different experiments.

Although the forces mentioned in the Harvard Report have been increasingly in operation for the last seventy years and more, the movement of General education does not seem to be traceable in the past over more than half of that period. The course in "Introduction to the Con-

1. *General Education in a Free Society*: Report of the Harvard Committee, Harvard University Press, Cambridge, Mass. 1955, p.5.

temporary Civilisation in the West" introduced for the first time at the Columbia College in 1919 is said to be the ancestral course of General education. This course itself was an outcome of the appreciation of the potentialities, for the times of peace, of a course in War Issues introduced in the same institution two years earlier, that is, in 1917. The idea of the "Great Books" course seems also to have been a production of the same period. We do not find it possible, on the other hand, to say when the term "general education" was used for the first time and what precise meaning such use was intended to convey. The movement has however, grown through a gradual and imperceptible process until after the Second World War it gained a significant position in the Higher education in the United States. And this process of growth was marked by numerous discussions, debates and controversies from which, as a living and growing movement, it is not free even today.

General education is usually distinguished from specialised, professional or vocational education and this distinction raises the question as to why it should be called "general" rather than "liberal" education. Is there any difference between the two? or, does "general" education merely signify a new designation for Liberal education in the specific context of Higher education in the United States? It is indeed a difficult question to answer. The distinction mentioned above is no doubt commonly made; but it does not suffice for establishing the identity between General and Liberal education. It is true, as the Report of the Harvard Committee points out, that "if one clings to the root meaning of liberal as that which befits or helps to make free men, then general and liberal education have identical goals," (p.52). But that does not again make the two identical. The argument that General education is "really liberal education in new dress"² does not seem to us to go far enough, for the difference between the two does not seem to be confined merely to the nature of the curriculum. It is perhaps better to regard the movement of General education as "an attempt to reinterpret the meaning of liberal education in a twentieth-century framework." Whether the result of the attempt is qualitatively different or registers merely an advance in degree perhaps remains a moot point.

One of the reasons why General education is distinguished from Liberal education of the traditional type is the historical association of the latter with a society divided between freemen and slaves, between rulers and subjects, between the leisured and the working classes. Modern democratic societies cannot accept this distinction. Instead of

2. See Earl J. McGrath, *Journal of Higher Education*, the Ohio State University Vol, XXIV, No. 3 p, 121

looking upon work as something lowly and disgraceful, the growing trend everywhere is towards the assertion of the dignity of labour for all. And leisure similarly can no longer be tolerated as a privilege of a few ; as an essential precondition for the cultural development of the individual, its distribution amongst all is considered desirable. While freemen of the olden days could have their education solely in the liberal arts, and the specialised and the vocational education could be reserved for the slaves or the workers, the two can no longer be accepted as two types of education meant for two different sections of the society. They become, on the contrary the two essential components of the education of a citizen of modern democracy. While Liberal education could be contrasted with Special or Vocational education, General education appears vis-a-vis these in an essentially complementary role. The two together can produce a useful social functionary, a responsible citizen and a rounded personality.

Another aspect of the relationship between General and Liberal education is brought out by the fact of the almost complete disruption of the tradition liberal curriculum during the last hundred years or so by the development of modern science and the increasing complexity of modern social organisation. Courses have multiplied rapidly ; specialisation has grown, leading to an enormous growth in knowledge ; and Vocational and Professional education has come in for an ever increasing emphasis under a variety of pressure from a rapidly growing society. A situation has thus been created under which restoration of the traditional liberal curriculum either to its original position or even to that of a complementary character to the growing specialised or vocational education seems to be virtually ruled out. It is no longer possible to speak of education as consisting of a few subjects like Mathematics, Greek and Latin classics, rhetorics or Christian ethics and so on and depend upon their liberalising and humanising influence on mind and character. The enormous contributions made by modern science not merely to the material means of existence but also to the realm of human thought and values cannot be ignored by any modern system of education, except at its own peril. It may be that in the United States, the impact of these forces was felt earlier or in a much more intense form. These forces are however, not peculiar to American society ; they are universal in their operation. Liberal education seems to be fighting a losing battle everywhere, and it is argued that if it is to survive and reassert itself, it can do so only as General education.

These forces have had their influence not merely on the curricula of colleges and universities but also on their major preoccupations and character. Increasing emphasis on specialised, professional or vocational education has tended to make these institutions imparting education for earning a living rather than education for life. The two need

not necessarily be regarded as exclusive or opposed to each other; on the contrary, as has been pointed out earlier, they may be said to form the essential components of sound education. However, with the limited and more or less fixed time at the disposal of the students, the increasing claims of the former gradually led to the sacrifice of those of the latter. Growth of knowledge brought about by specialisation led to the further promotion of specialisation. The earlier functions of training of mind and formation of character and what is often described as the "transmission of culture" were relegated into the background by the colleges and the universities which were increasingly transformed into mere centres for the advancement of knowledge. Research came in for greater and growing emphasis and "teaching" suffered from neglect. In fact, preoccupied mostly with specialised and professional education as well as research, the universities at their post-graduate level came off much better through this process than at the under-graduate or the collegiate level. The colleges virtually faced the prospect of extinction of their individuality and began to take the place of a preliminary training ground for subsequent specialised research work. Education increasingly ceased to be a formative process and came to be more and more conditioned by the social life around. Unable to transmit the cultural heritage, a sense of the good life and a feeling of common citizenship, educational institutions appeared to be failing in ensuring the continuity of social existence and preservation of its basic values. Preoccupied with fostering the growth of unrelated specialisms, they could not help in preventing society from drift and ensuring its orderly progress or change with a sense of direction.

The product of educational institutions, developing in this manner, became increasingly specialised in an ever-narrowing field. Concerned with becoming an expert, he often missed the significance of his humanity. While engaged continually in furthering the advance of science and technology, he usually failed to see or experience their profound liberating significance and to develop the maturity so essential for proper use of the enormous power science placed in his hands. His social understanding when it was not altogether superficial, became partial and fragmentary with the result that outside his limited field, he became either reluctant to face the responsibilities of decision-making or an easy advocate of panaceas of one kind or another. Above all, he virtually lost all sense of his heritage, all contact with the realm of man's relation with himself, the realm of human values and ideals. And all this has been happening in a period in which practically everywhere an ever-increasing number of individuals were being involved in the process of decision-making of one kind or another. The failure of education appeared to be writ large in its products, who, unable to preserve their integrity and devoid of the necessary capacity for responsible

commitment, became more and more indistinguishable from the amorphous mass so prone to be thrown into hysterical moods through elementary mass suggestions of one kind or other. It is, perhaps, not possible to explain the developments of the past few years in simple terms; the reasons for them may be many. It cannot, however, be denied that some of their roots lie in the field of formal education. Whether formal education is required to take over some of the functions of other social agencies and institutions like, for example, the family, which seem to be failing today in respect of transmission of culture or whether it remains confined to its own sphere, one thing is clear that it must at least perform its functions in a satisfactory manner. As a matter of fact, the increasing number of students entering the portals of colleges and universities afforded them, in a sense, a much better opportunity to influence the life and conditions around. But the educational institutions lost in an increasing measure the initiative and the capacity to do so and became instead increasingly influenced by those conditions. This, although natural to some extent, cannot be regarded as wholly justified. The movement of General education seems to be a positive response in the field of education, born out of dissatisfaction with these conditions. It is an attempt on the part of education to regain the initiative lost mainly as a result of the developments during the last hundred years or so. It signifies an effort to correct the present lop-sidedness in the field of education through the restoration of balance appropriate to the conditions of the twentieth century.

We have already pointed out how the developments which led to the emergence of the movement of General education in the United States cannot be regarded as essentially American; their significance seems to transcend the limitations of any national educational system. The enormous increase in knowledge in our times is a factor of universal significance and cannot admit of any geographical or political limitations. There is similarly an unmistakeable trend everywhere in the direction of an increasing adoption of modern technology and the development of modern industry. It is obvious that all societies will not and cannot be expected to reach the same level in this respect; but it is also undeniable that all will have a high, though varying, degree of complexity. It may be that the U.S.A., in the absence of a background of feudalism and with a very rapid tempo of development, could experience social mobility to a much greater extent; but with the rapid spread of egalitarian ideas and outlook and with the increasing efforts of a large majority of people to come into their own, traditional aristocracies everywhere may be expected to decline. Democratic political systems in the interests of sheer survival will have to move rapidly in the direction of democratising society itself. Countries less fortunately situated in respect of material means may not find it easy to open up quickly

the perspective and possibilities of higher education for all. But they will still have to uphold the principle of equality of educational opportunity and translate it in terms of concrete educational programmes acceptable to all. Increase in the number of students and their education through an increasingly complex educational system consisting of a large variety of institutions is also thus an experience bound to be met with elsewhere, though not in the same measure. What therefore appears to be an essentially American background of education seems to have in a sense a universal import and herein, therefore, lies its significance for our country. Before commenting on this significance, however, we may point out in broad terms the nature and objects of General education against the background of the preceding discussion.

A word may be added at this stage regarding the relation of General education with specialisation. General education is in no way hostile to specialisation nor does it in any measure undermine its significance. In fact, as we have already pointed out, the two are essentially complementary to each other. General education will provide "a milieu in which the speciality can develop its fullest possibilities....specialisation can only realise its major purposes within a larger general context with which it can never afford to sever organic connection,.....General education is the appreciation of the organic complex of relationships which gives meaning and point to the speciality*." In fact, the report of the Harvard Committee goes further and points out that General education and specialisation cannot be altogether separated from each other nor can the latter be made to serve the purposes of the former. "If General education be left entirely to courses taught from a special or technical point of view, or with a special, some times vocational, end in mind, then General education must suffer even though almost any first-rate specialisation promotes in some measure the end of General education*³." Specialisation will no doubt continue to remain a major need of any modern society which shall have to be constantly engaged in improving its quality. Men of first-rate calibre in various special fields will always be in demand and the student will therefore be continually drawn in that direction with great enthusiasm. Nothing need be done to weaken that enthusiasm or to prevent him from realising his fullest potentialities in a field of his inclination and choice. Improvement of the quality of his specialisation is something in which his personal interests and the well being of society coincide and therefore it must form a matter of major concern to the educational system. One does not at all aim at weakening the case for specialisation when one speaks of the evils of over-specialisation. What is hinted at is the absence of a

*General Education in a Free Society ; p : 195.

balance, a background of broad understanding which can raise the quality of the work of a specialist by putting it in its proper perspective and proportions. The point has in fact been so often stressed in the case for General education that there is hardly any need to entertain any fears on that account.

General education, as we have mentioned earlier, is an attempt of liberal education to survive in the twentieth century context. It aims at providing the student with an understanding of his heritage, and seeks to help him appreciate and imbibe a sense of good life and develop the capacity and equipment for discharging properly the responsibilities of common citizenship. The actual formulation of the objectives often differs accordingly as emphasis is placed, for example, on the content of knowledge, the development of personality, the qualities of experience, and so on. Some seem to suggest the avoidance of formulation of any aims, not only absolute but even those fixed "for the time being or temporarily." It is not necessary for our purposes to enter into a discussion of these different viewpoints. Underlying all of them seems to be a common consciousness of the crisis not only in education but in civilisation itself. Education must be left free to approach the problems confronting civilisation in its own way, to undertake and attempt a variety of experiments aimed at meeting the social situation and help its products cultivate qualities or virtues that will stand them in good stead in responding to its requirements. Differences in the formulation of objectives are bound to lead to different programmes and in methods of instruction being devised or adopted for their realisation. No uniformity in this respect is possible or desirable in a democratic system. The programmes in fact may themselves have to undergo revision from time to time in the light of critical evaluation of the accumulating experience of their actual operation.

General education, it may however be pointed out, seeks to emphasise education for the free man and a responsible citizen as an essential component of education. It thus aims to provide what has been missing at present as a result of a one-sided emphasis on specialised professional or vocational education. And in doing so, it puts an accent on knowledge rather than information, on method rather than findings, on behaviour rather than mere intellectual attainments. One of its aims seems to be to familiarise the student with the complexities of decision-making, to help him understand the techniques of problem-solving and thus develop his capacities to decide. It recognises the enormous significance of science and seeks to provide for it a legitimate place in the education of the average individual. It tries to bring students into direct contact with great minds and their creations, to provide them with glimpses into the books for all time, to help them understand problems and realise, by going beneath their contemporary

colourings, their location in the perennial pursuits of mankind. Its purpose is to provide a synthetic or integral understanding which say either directly inform the formulation of curricula or be left to be realised by the student himself on being shown the possibilities of integration. It is education of the student for life in his times and as such an essential supplement of education for earning a living. In trying to do so, General education seeks to jettison the ballast of inert ideas or knowledge as urged by Whitehead, or views education as an aspect of human activity thus endeavouring to link it with life as suggested by Dewey or seeks to restore transmission of culture as an essential function of the university, thus helping it to escape the consequences of producing "civilised barbarians" against whom Ortega protested. It thus wants to bring seminal ideas in various fields within the reach of the student, make education more effective and promote his cultural development and maturity.

The movement of General education as a result has had certain common academic and curricular consequences. It has led to the bringing of the hitherto neglected "collegiate level" of Higher education into its own so that it may perform the function of imparting such education in a satisfactory manner. Where under-graduate courses are taught by the universities or the "college" is a part of the university itself, the process could be described as restoration of balance in the functioning of the university. As President J.B. Conant has argued ; "The cultivation of learning alone produces not a university but a research institute ; sole concern with student life produces in these days either an academic country club or a football team manoeuvring under a collegiate banner ; professional education by itself results in nothing but a trade school ; an institution concerned with General education, even in the best liberal arts tradition, divorced from research and training for the professions, is admittedly not a university but a college. Therefore, to my mind, the future of the American university depends primarily on keeping a balance between these four traditional elements of strength."⁴ General education programmes also seem to have brought in an accent on sound teaching to supplement the emphasis on research and have led to a revision in the methods of teaching so as to make the student increasingly rely on himself and develop the habits of critical thinking and independent judgement. The discussion method with classes consisting of about 20 to 25 students is a fairly common feature of the teaching in General education. The movement has also involved modifications in the mode of examinations so as to reduce the reliance on mere information and memory.

We do not think that General education programmes can be imported or copied by any country from elsewhere. Although the

4. James Bryant Conant : Education in a Divided World : Harvard University Press, Harvard, Mass. 1949, p. 159

objectives of sound education may appear to be capable of being stated in a universally applicable form, their translation into academic or organisational terms must differ from country to country. In fact, it would not even be a case of adaptation of programmes found suitable elsewhere. What would be rather necessary is an attempt to evolve our own programmes suited to our own peculiar conditions. In making a beginning in that direction, experience gained elsewhere can serve as a useful guide. As a matter of fact, in the field we are surveying, various approaches and programmes influenced by them are being experimented with even within the same country. It is also recognised that different programmes may be found suitable under different conditions as also that a given programme may have to be revised with a change in the conditions in which it operates. No advocate of General education can possibly say "eureka", nor is it desirable to claim at any stage that the last word has been said about it. We have already pointed out, in broad terms, the relevance of General education for any country in the present context. Whether the context is of a highly developed technological society or of an underdeveloped society primarily concerned with promoting rapid economic development in the interests of its commitments to the democratic way of life, experiments in General education will still possess an element of relevance for all. But in determining their nature, the particular background conditions and objectives of the country and the nature of its educational system are bound to exercise considerable influence. We shall now comment briefly on some of these factors in the context of our country.

It is evident that our educational system will have to function in a society committed to democracy which is seeking to realise social justice and the opportunity of cultural development for all. The principles underlying the type of social organisation that we wish to create, have been laid down in the constitution and their meaning and significance from the point of view of the educational system were brought out by the University Education Commission in Chapter II of their Report. We have taken those principles as the broad aim of our educational system. It must be clearly recognised that education cannot aim at the promotion of acceptance and appreciation of these goals among the coming generations through direct and deliberate means, without impairing its own quality. It should, for example, avoid any attempt at direct inculcation of the democratic way of life in the minds of the students or any forms of indoctrination. Any attempts in that direction are bound to be self-stultifying and will defeat their own purpose. Conviction of the desirability of the democratic way and concern for its preservation must result from the growing understanding and experience of the student instead of being preached or sought to be passed on to him from the academic pulpit. And in order that they emerge

in this manner, institutions of learning, like the colleges and universities, must be left free from any interference, however nobly motivated it might be. The atmosphere of freedom must be experienced in these institutions by the scholars, teachers and students so that it may radiate from there into the wider fields of social life. This need not be taken to mean however, that the universities can be free from social responsibility. As a matter of fact, in a rapidly developing society like ours, the desirability of increasing realisation of such responsibility on the part of the institutions particularly of higher education seems to be clearly indicated. We already have clear signs of growing cooperation between the universities and the community at large and such cooperation shall have to be fostered, of course without encouraging the tendencies to make the universities directly subserve the ends of the community.

Discussion of the need for adopting the programmes of General education in our country has to proceed, we believe, in the aforementioned context. Against this context, we are actually confronted with highly complicated picture as also some significant opportunities.

One of the considerations demanding initial attention is that a community bending all its energies so as to create, as rapidly as possible, the essential preconditions of raising living standards for all will naturally have to place an accent on specialisation in various fields. To be able to solve the economic problem satisfactorily and expeditiously, we shall need first-rate specialised talent of different kinds. It will be naturally a responsibility of the universities to produce such specialists and they will tend to do so in an increasing measure, largely under the impact of the process of development itself. We do not suffer from over-specialisation so far; specialisation will actually have to continue to be encouraged and helped to grow in our academic and educational institutions. But we cannot allow at the same time the educational systems to develop under the impact of the surrounding conditions and in course of time be faced with problems already encountered with elsewhere. As a matter of fact, with our deliberate efforts to accelerate the tempo of development, the above situation may arise for us much earlier than may be expected by many. Another important consideration which will naturally arise in this context is about the supreme need for ensuring continuity and stability in this period of rapid change. The change must not lead us to the position of having to lose our bearings, or being cut off from our social and cultural moorings. No society can start with a clean slate. But societies perhaps can get dislocated and disorganised if rapid and far-reaching changes of the kind we are embarking on, are not balanced by a legitimate and helpful feeling of self-consciousness.

The requirements of our economic, political and socio-cultural life seem to confront us today with difficult and delicate problems. A state-sponsored effort at economic development will demand of the growing generations a sense of responsibility and discrimination, a proper time perspective and a developed and maturing social and civic sense conducive to helpful and constructive participation. These will be demanded as much of the experts as of the large majority of the people. On the other hand, no sustained and significant developmental effort is possible through the efforts of the state alone. And in order therefore to furnish such an effort with a broad and stable basis, it becomes necessary to encourage initiative, a spirit of enterprise, and the growth of spiritual vitality which can sustain voluntary efforts on a cooperative basis. It is not easy to reconcile the two sets of qualities. In fact all that any attempt can at best hope to achieve is a purely tentative and workable reconciliation. Similar complications would also arise in respect of the expectations entertained of an intelligent citizen in a democracy and a welfare state. While the former may demand critical and independent thinking, the requirements of the latter may tend in the direction of conviction and confidence.

The fact that not even a decade has passed since our emergence as an independent country confronts us with some peculiar problems. We have to repair serious damage and preserve a valuable legacy so far as the educational system inherited from the period of foreign rule is concerned. Higher education as a result of foreign rule has been through the English language; it therefore encouraged the development of a gulf between the educated and the large masses of our people. But a much more serious damage of the period perhaps lay in the fact that successive generations of students received their education without any introduction whatsoever to their heritage. This is an extremely undesirable thing in a society engaged in a gigantic experiment of social reconstruction. A critical appreciation of the past, an understanding not merely of the causes but also the roots of the present is an essential component of any sound education; and we have therefore to remove speedily this deficiency commonly found at present.

But this kind of growth of self-consciousness must not amount to a growth of narrowness or Chauvinism. English education has left in this respect a valuable legacy which must be preserved. It has enabled us to rise above the so-called distinctions of East and West and to welcome the great elements elsewhere as part of the heritage of man. The Ramayan and the Iliad, Kalidas and Shakespeare can all become valuable elements in the heritage to which an Indian student can now easily be introduced. He can thus be helped to rise to the level of development of his personality appropriate to the context of the twentieth century. What was hitherto a serious disadvantage for us can thus now be turned to our advantage.

It is essential that a rapidly developing society like ours must be free from any impeding influence of cultural tensions and conflicts. We do have a number of such tensions existing at present in our midst. Caste, class, language, religion, all of those lie at the root of many of the toxins in our body politic ; and their influence must be prevented from impairing the health of our social existence. Education must not only help reveal the complex nature of these forces and the sources of their strength but also enable the students to understand and appreciate the techniques of creative social adjustments in the context of the dynamics of development. Social homogeneity, so essential for the realisation of social justice and the functioning of a democratic policy can thus alone become a growing reality. A historical approach, e.g. which goes beyond the immediate past of Islamic conquest of India to the great contributions of Islam in preserving and developing the heritage of ancient Greece and passing them on to Europe during the period of the Renaissance, and an analytical approach which places the caste, communal or linguistic differences in the appropriate context of a rapidly shrinking world of the twentieth century can significantly contribute to the student imbibing a proper sense of history or a perspective in respect of the contemporary problems engaging his attention. It must also help him transgress the limits of any narrow national or chauvinistic sentiments and grow in stature as demanded by his times.

The process of rapid economic development which is under way at present is bound to bring into the country modern technology in an increasing measure. This will itself lead not only to a more complex social organisation but also introduce a series of new stresses and strains in our social life. Technology in the absence of a background of science, and science without that of growing maturity and understanding, can easily become forces of a disruptive character. It is quite possible to import gadgets without any regard for the social and cultural committants which alone can ensure their healthy and helpful functioning. It is hardly possible to arrest the process of technological development ; it is therefore all the more necessary, and should be possible even though not easy, to accelerate the pace of cultural development. Technological tools and devices themselves could be harnessed to that purpose and be made to render services of inestimable significance. We therefore feel that acquaintance with science, its methodology and its liberating significance must be looked upon as an essential element in the education of every student in our colleges and universities.

It has not at all been our purpose in the foregoing discussion to present, or analyse, the manifold problems before the country, nor have we been concerned here with pointing out any possible approaches capable of contributing to their solution. Our object has been merely to indicate, in obviously broad terms, the enormously complex situation

confronting education, and the many-sided challenge it involves for the latter. If education is to develop into a formative social process seeking to discharge its responsibilities towards society through what it provides to the students, it shall have to take up that challenge. We believe that the adoption of the idea of General education and working it out, maybe through a variety of programmes, can contribute to the proper discharge of its responsibilities by formal education. Acceptance of General education, as a component of the education of the growing generations of our students, will therefore meet an essential need.

General education, it is sometimes argued, is called "general" for two main reasons : it embraces a very large body of students, for both schools and colleges or universities can be its area; and secondly that as education, it seeks to transcend the traditional boundaries of disciplines and departments and concentrates attention on broad areas of knowledge. The former raises, among others, significant problems of co-ordination of programmes at the secondary and at the collegiate or university levels; the latter involves similarly a variety of problems like constructing curricula, selecting reading materials, and devising appropriate methods of instruction and examination. Many of these problems have been examined in greater detail in some of the following chapters of this Report. Without anticipating that discussion at this stage, we shall comment briefly on the nature of some of the issues so that the subsequent treatment may be seen in its proper setting.

Coordination of General education programmes at the school and collegiate levels is essential in the interests of avoiding waste and duplication. Since the overall time devoted to the formal education of a student is limited, it is essential that it must be used as helpfully and efficiently from his point of view as possible. It cannot be justified to require him to study subjects for a year here or there, which leave no trace in the form of his possession of "tools" or the growth of his knowledge and understanding for the remaining period of his educational career. The criterion of avoiding waste will therefore necessitate an adjustment in the teaching of different subjects so that they get a meaningful place in the total curriculum at any given stage. This is true at any rate of the last two years of the secondary stage and the collegiate or the university stage up to the first degree. Similarly, duplication at the collegiate level of what the student has already learnt at the secondary level is also not desirable. Apart from its constituting a serious waste, such duplication will make the student feel the collegiate level uninteresting. It might even affect his entire approach to what he is required to do and can have serious consequences on his entire future education. An interesting experiment was attempted at one of the places we visited, in working an integrated programme in General education for the last two years of the secondary stage and the first two

years in the college. Although for a variety of reasons, the experiment had to be eventually abandoned, its significance seems to us to be worth noting; and we feel it particularly important to emphasise the desirability of bringing about such co-ordination in a suitable manner when significant changes affecting both the levels of our educational system are about to take place.

The other aspect of the term "general" refers to the essentially inter-disciplinary character of its programmes. Placing the student at the centre of the programme, it aims at imparting him a broad understanding of Nature, the society to which he belongs and the world of values and ideals created by the human spirit. It also seeks to develop in him certain essential skills of communication and a capacity for clear thinking with which these are organically connected. The programmes thus involve emphasis on broad areas of knowledge such as the physical and biological sciences, the social sciences and the humanities and the field of skills known by the general designation, communication. The courses evolved in the former fields are usually courses dealing with significant and seminal ideas and methodology. Survey courses dealing generally with the entire subject matter of particular disciplines were popular in the twenties but are now mostly discarded. The courses in communication are intended to develop certain specific skills through suitable methods of instruction. It is not necessary at this stage to go into any detailed discussion of the nature of these areas and their significance in a total General education programme. What we would like to point out is that the object in transgressing the limits of particular disciplines in this manner is to bring out the inter-connectedness of different disciplines and indicate the possibilities of their integration. In a sense, therefore, the reference to these areas also becomes a matter of convenience. Their inter-relations have to be brought into light irrespective of whether one starts with a *a priori* assumption of unity of knowledge or leaves it to be realised, if possible, through actual experience.

This raises the problem of integration and its place in General education. We have already referred to this problem in an earlier context. Advocates of General education programmes often point out that many of the recent developments in the highly specialised field of natural sciences appear to be breaking down the boundaries of traditional disciplines. In the social sciences where the boundaries have been much less sharply defined, the impact of recent developments seems to be leading to similar results. Humanities do not lend themselves to demarcations of this type. The movement towards integration is thus in keeping with the spirit of the times so far as the realm of knowledge is concerned; and integration can be with various purposes and at various levels. Another aspect of this problem is about the proper stage at which such integration should be attempted. The argument

that things ought to be seen in their separateness before their inter-relations can be grasped, that introduction to the different particular disciplines should precede any attempt at integrating them seems to be logically sound. But it is pointed out, on the other hand, in the light of modern psychology, that the "integrative approach" is more primitive while the analytical ability comes in at a much later stage. However, at the age at which the student enters the university, the two activities can be undertaken in either order. We have already pointed out that the curriculum may itself provide for direct integration or the latter may be sought to be achieved through independent courses, especially designed for the purpose. Similarly, courses in history may be devised to suit the purpose of chronological interpretation or those in philosophy may aim at integration in the realm of ideas and values.

It is sometimes argued that exposing a student to the different areas of knowledge during the initial year or two helps him later to make a more appropriate choice of the field of his specialisation; and that therefore General education must precede the choice of such a field, which ought to be a subsequent decision. It need not be denied that some students may find themselves in a much better position to make such a choice after having passed through the courses in General education. But we do not think that the point needs to be particularly stressed. Broad familiarity with some of the significant ideas of a discipline before it is chosen, cannot possibly guarantee that the choice will always—or even often—be right; nor does it provide any reasonable assurance that a subject once chosen for specialised study will continue to be pursued with sustained enthusiasm. It is also known that on numerous occasions, considerations other than one's inclinations or aptitude also enter such a choice. We therefore think there is no special reason why programmes in General education must necessarily precede specialisation. There can hardly be any serious objection to such programmes running concurrently with specialisation. If undertaken with proper care and requisite enthusiasm and understanding, such programmes may equally well satisfy the broad purposes of General education.

A question often discussed in the context of General education programmes is whether it is better to allow students to choose particular courses within a broad common framework or whether there should be a common programme devised for all, so as to make all of them pass through a common educational experience; whether General education can also be individualised thus paying attention to the special needs of individual students or whether it must emphasise what the student needs to know and require all students to know it through a common curriculum. We do not think the question admits of any definite answer. Once the broad objective and the overall nature of

such a programme are clear, there can be considerable flexibility in it as regards the means of realising them. In the absence of any actual experience of working such programmes in the specific context of our country, and of the reactions of teachers and the impact on students, it may be useful to try both the approaches. It is always possible that experience of teachers may lead them to diversify an initially accepted common programme, or the choices of students may lead to making one of the offered alternatives a common pattern.

We have already stated that the programmes in General education deal with three broad areas of knowledge, viz : the natural sciences, the social sciences and the humanities, and accompanying all these are the courses in communication. A further division is usually made in the area of natural sciences between the physical and the biological sciences. The courses in none of the three areas need be survey courses, either historical or of the subject-matter. They should be clearly distinguishable from elementary or introductory courses in particular disciplines or departments.

The object of the courses in natural sciences is to acquaint the student with the essential principles in different particular fields in the context of their inter-relationship and thus enable him to realise the nature of the scientific enterprise. An understanding of scientific method, of the essentials of scientific outlook, and of the many-sided impact of science in the realm of human thought and activity will have to be significantly involved in any such course. At the same time, the course has to be designed in such a way that the student not merely learns about science but gains familiarity with science itself. Mere demonstrations of experiments in the classroom may not actually suffice for the purpose. Some familiarity with laboratory work through actual performance of experiments seems to be clearly indicated as an essential ingredient of such courses. Courses in biological sciences can aim at an integrated treatment of the science of living organisms, plant and animal. It is true that in view of the vast field in the area of natural sciences, this division between the physical and the biological sciences seems to be a convenient division for practical purposes. But it must not in any way lead to a neglect of the close inter-relation between the two and their impact on each other. The significance of some of the recent developments in this area is unmistakably in the direction of undermining if not actually demolishing the traditional boundaries between the different disciplines.

If the object of the courses in the natural sciences is to give the student an understanding of his place in the Cosmos, that of the courses in social sciences is to promote his understanding of society, so that he may be able to find his place in it not only as an intelligent, helpful and constructive member but also as an autonomous unit. Integration in

this area can proceed either along historical lines laying bare the roots of the present or along those of a systematic description of society as a unity. One of the common approaches to such intergration is through the contemporary problems engaging the attention of the student. An essential requisite deepening the social understanding of the student is his being introduced systematically to a society other than his own. Social understanding eventually tends to express itself through social action involving purposes, preferences and choices. A treatment of different synthetic viewpoints and the value-preferences linked up with them will therefore have to find a place in such courses. It is at the same time essential for the student to realise that social "facts" are often not neutral but heavily loaded with preferences and emotional meanings; and that he has therefore to be familiar with the methods developed in social sciences for tackling their manifold problems through a factual or positive understanding of the phenomena with which they deal.

Understanding of nature and of society must be supplemented with that of man, his heritage, the realm of his ideals and values. This leads to the third area of General education, viz, humanities. General education does not admit of confining the meaning of humanities to classics alone; but extends it so as to include the entire realm of the artistic and aesthetic creations and achievements of the human spirit. Classics, literature and poetry, graphic and plastic arts and music—all have to find their place in this field. The student has to be brought into direct contact with a selection of classics, literary and philosophical, to experience their impact and deepen his intellectual and emotional understanding. "The study of arts in General education can aim chiefly at the appreciation of arts as forms of human expression, at the awakening of student's sensibility to beauty and his everyday surroundings".⁵

In order to understand the world in which he lives, the student must learn to communicate effectively. He must be able to write and speak clearly, concisely and effectively as well as to understand, appreciate and evaluate critically the writing and speaking of others. These abilities are fundamental to any sound educational experience. The cultivation of habits of effective communication by word and by number must, therefore, be an essential objective of General education; and a course designed to promote such habits must find an important place in a programme of General education. As students acquire these habits and skills implicit in them, their ability to formulate ideas will increase and their thinking will become clearer. It is true that thinking is increasingly becoming thinking in specialised fields which can only be learned through the study of the relevant disciplines.

5. Report of the University Education Commission, Vol. I, p. 129.

It may also be argued that the habits of correct thinking acquired in one field are not carried over to another unless two fields are similar in nature. There are, however, fields of interest which are broad and in which everyone has an interest because they affect him as a human being and as a citizen. Again, with the expansion of mass media of communication in modern life, cultivation of the habits of critical receptiveness, which is an important aim of education, has acquired an added significance. In contributing towards the realisation of this aim, the course in communication will appear to be an essential complement to the other courses in a programme of General education.

CHAPTER III

Some Features of Higher Education in U.S.A.

The matrix of the changing pattern of the American Higher education is neither entirely endogenous nor simple. There is developing an increasing insistence on 'education in a common heritage and toward a common citizenship' side by side with growing specialistic training; and this is taking place within the institutions of Higher education but not in absolute isolation. Thus, the Harvard Committee as already mentioned in chapter II points out that among many reasons for this concern becoming so strong in recent years, three stand out, namely, 'the staggering expansion of knowledge produced largely by specialism and certainly conducing to it; the concurrent and hardly less staggering growth of our educational system with its maze of stages, functions and kinds of institutions; and not least, the ever-growing complexity of society itself.' (Report p.5) A more recent Committee on General education that included members of the faculties of Harvard, Princeton and Yale focussed attention on three major weaknesses in the current pattern of connection between school and college viz., the educational waste due to repetition and dropping out of certain subjects; the serious gaps in students' training and experience; and failure to arouse interest and challenge initiative. On the whole this Committee felt that there was a failure to communicate to students the full meaning and purpose of a Liberal education. 'Too many students never know what a Liberal education is'. (Report p.15).

Nonetheless, these background factors do not explain the development of the educational principles that emphasise the place of General education or its objectives, on purely academic grounds. These at best help to examine the movement in its proper perspective. To quote again from another American source: "The consequence of all these developments—the expansion of knowledge, the multiplication of courses, rise of the elective system, increase in complexity of living, development of new occupations and the vast increase in college enrolments—was an increasing disunity in Higher education. The General education movement developed as an effort to restore a measure of unity around

the objective of preparing students for responsible living and participation in a democratic society". (Encyclopaedia of Educational Research U.S.A. 1952 p. 491). A brief reference to the broad features of the American educational system may therefore be not quite out of context here, particularly, when we realise that many of our readers in India may be unfamiliar with them.

According to official sources there are more than 1,800 institutions of Higher education in the United States and they have an enrolment of 2.4 million students. As many as 650 or roughly about one-third are public institutions, although they account for more than one half of all resident students. The State Governments maintain roughly half and the City Councils maintain the other half of these public institutions. Each State has a State university, a few have more than one and all have land-grant colleges. The rest of the institutions are privately endowed and are run by their boards of trustees who look after their finances.

Among these institutions of Higher education only some 121 are listed as universities and another 450 or so as liberal arts colleges. The rest of these are classified as junior or community colleges and professional and technical schools. The junior colleges provide education for the first two of the undergraduate collegiate years and at the termination of their education here students can join the universities and liberal arts colleges or professional or technical schools. Many of these, however, do not offer such college preparatory programmes or pre-professional courses with emphasis on General education but provide for a terminal vocational programme that provides a well-rounded foundation for immediate employment. These colleges vary in size from those enrolling 25 or less to those with an enrolment of 9,000 or more. On the whole 70 per cent of the junior colleges enrol less than 500 each and many of their students are part-time students.

The separate professional and technical schools provide for courses leading to a baccalaureate degree in a profession e.g. teaching, engineering, music etc. and these are both public and private. Approximately four-fifth of the public institutions of this type are teacher colleges and about two-third of the private schools are theological institutions.

The liberal arts colleges are mostly private with a relatively small enrolment of less than 1,000 students each. Only a few enrol 2,000 or more students. These are mostly endowed by religious groups. These colleges, like the universities, offer a full four years' undergraduate programme in arts and sciences and confer their own degrees. Some of these colleges also offer training in professional and technical fields.

The universities offer not only the four years' undergraduate programme for arts and science degrees but they provide for graduate work for a master's or doctoral degree. Many of them have provision for professional and technical education and the bulk of the country's

formal organised research is carried on by them. Nearly half of these are 'State universities' and of these nearly 50% have the land-grant colleges as an integral part of their structure. The universities although few in number account for more than half of the resident students at the Higher educational level and hence these are relatively large in size. Their average enrolment is about 10,000 each and 28 per cent of the public universities and nearly one-fifth of the private universities enrol more than 12,000 students each. These are all teaching universities and are largely residential.

All the universities and liberal arts colleges are not co-educational. Many of them admit either boys or girls only. Yet girls' Higher education has not suffered on account of that and roughly at present, out of every three students enrolled for Higher education, one is a girl. The number of college students has increased tremendously since the turn of the present century—the increase being estimated at 925 per cent of the first fifty years. A little more than 28 per cent of the persons in the college age-group now attend colleges. This proportion has increased from only about 15 per cent as late as the year 1940.

There are wide differences among these liberal arts colleges and the universities with regard to the costs of education, teacher-student ratio and per capita expenditure. The overall averages in this respect give little indication of these disparities and yet these are useful in indicating broadly the general standard. For about 2.4 million resident college students the Higher education institutions have a staff of nearly 200,000 i.e. one for nearly every ten students. The average current expenditure for all these institutions taken together comes to about 1,000 dollars per student per year. Fees charged from students meet less than one-sixth of the total expenditure. Most of the organised research in the universities is supported through research contracts with the armed forces, the Atomic Energy Commission, and other Federal and State agencies. A rich university like Yale has a faculty of as many as 1,700 for its 7,000 students but this is certainly not the average.

The American universities and colleges work without interruption during the terms. Apart from the eight to ten week vacation at the end of the session and the two approximately one fortnight vacation each at the end of semesters, there are hardly any holidays or breaks in between. Even the comprehensive examinations coming towards the close of a session occupy very little time and are seldom preceded by any break or a preparation leave. The number of actual working days available for classes would easily be more than 180 per year and this measures the time available for the teaching of various subjects. To keep pace with the courses an undergraduate, according to one estimate, has from the very beginning of a session, to study for at least 48 hours per week,

Still, many undergraduates fail to complete their programme. In a private university with a highly selective enrolment, as many as 95 per cent might succeed in going through all the four years of the undergraduate studies. But in universities with less selective enrolment and, particularly, in the State universities that have often an obligation to admit most of the qualified candidates seeking admission the proportion of those who drop out is quite substantial, and may be as high as two-thirds of the original. The former type of universities admit only from the uppermost first quartile high school graduates while the latter are obliged to have many from the lower quartiles also. A few of those who drop out transfer themselves to other universities and colleges but most of them simply discontinue their further education. Personal reasons such as financial difficulties, family troubles etc. may account for a fair proportion of these dropouts but the largest single known cause is failure. This may be due to either their unfitness for college education or may be evidence of the unsuitability of the curricula for many of them.

In any case it cannot be due to any feeling of frustration or lack of interest in their programme due to bleak prospects of employment and earning after college graduation. On the contrary, the sharp rise in average earnings and full employment at present of those with four or more years of college education is more likely to make an undergraduate seriously devoted to his studies and interested in his work. According to the last population census Special Report on Education the average annual income of persons in the age-group 45-54 years rises from \$ 3,500 per person for High school graduates to only \$ 4,000 for those with one to three years of college education. Obviously the latter do not have any substantial advantage. But the average income rises sharply to \$ 6,000 for those with four years or more of college education and brings to light the large handicap of the dropouts. With regard to fresh college graduates a recent sample survey of some 350,000 men and women, who will be leaving colleges and universities after successful completion of their courses this year reveals that none will have any difficulty in getting a job while many students have already five to ten offers (New York Times, May 27, 1956). The salaries for new entrants range from \$ 300 to \$ 400 per month.

The universities and colleges prescribe their own admission qualifications and many select only a few out of the many qualified applicants for undergraduate programmes. Before entering an institution of Higher education a student must have completed twelve years of school education—eight years of Elementary school and four years of Secondary or six years of Primary plus three years of school plus three years of Higher Secondary. The minimum age at the time of entry to a college is thus seventeen plus and this is often prescribed by college

regulations although exceptions are always made. All States have compulsory education and in most it begins at the age of six years or even later, and hence many students particularly in the West enter college after the age of eighteen years. College graduation takes another four years and thus the normal pattern of American education is eight years of Elementary school, followed by four years of High school or Secondary school and four years of college for the bachelor's degree.

The American High schools, as elsewhere are not simply college preparatory schools. But their distinctive character is that they offer a very large number of courses and since a student can complete only a few, there prevails a course-unit system. For graduation a student is required to offer sixteen course-units—a unit representing a year's work in one subject. To avoid haphazard combinations large High schools prescribe overall courses: vocational, business, general, college preparatory and scientific. Three fourths of the High school graduates look forward directly to work and the High school is preparatory to college for a small minority only. The Harvard Committee has emphasized two serious dangers in the system that resembles the system of "concentrating" or "majoring" in a given subject *viz.* the 'alienation of students from each other in mind and outlook because their courses of study for the various diplomas are so distinct, and the disjointedness of any given student's work because instead of being conceived as a whole, it falls into scattered parts' (Report p. 14). Further, the students entering the colleges have thus a large variety of preparation both in quantity and quality. This is mitigated to some extent by some individual universities and colleges prescribing certain subjects that a student must have taken for High school graduation before he can qualify for admission, and selection of a few out of the many qualified applicants for admission. Some universities hold their own entrance tests in addition. Selection is however not carried to any large extent in the State universities for many universities include a foreign language and mathematics among the prescribed subjects. On the whole these are the students from the uppermost quartile only that have any chance of admission to the better known universities. Still the situation as summed up by a Committee on General Education is that some colleges and most universities admit candidates from several hundred Secondary schools. 'So limited is the training' it is stated, 'by many of these schools that the colleges are obliged to offer and require "beginner's" courses in many of the fundamentals of learning. Often the college must spend the greater part of a year in picking up the pieces of a student's fragmented and impoverished Secondary education.' (General Education in School and College. Harvard University Press, 1953, p. 9).

The undergraduate programme in any university, or liberal arts college is spread over four years i.e. freshman sophomore, junior and

senior classes. For a bachelor's degree a candidate must thus complete four years of college education after the twelfth grade. Here an undergraduate has to make a choice out of a long list of courses that are available. He accumulates 'credits' as he completes the various courses—three credit points being often given for a course three periods per week for a year. There may be even half courses running for a semester or term only. A candidate is required in general to earn 24–28 crédits each year and in all four years the total credit points accumulate to 110 to 120. Each department offers a large number of such course units covering a full academic year or a semester or a term only. In the case of migrations from one college to another, and these are not inconsiderable, a student usually gets credit for the points earned by him in the institution that he leaves.

In the larger colleges and universities the distinct courses thus available to the undergraduates run into hundreds e.g. at Harvard the number of such courses is normally more than 400, of which any sixteen are required for the bachelor's degree. The choice of the students is not so difficult and haphazard as these numbers indicate, for account must be taken of two facts—firstly the free elective system has almost everywhere been restricted by what are known as 'distribution' and 'majoring' or 'concentration' requirements; and secondly, through the aid of his faculty adviser, a student always knows how to choose. Through the distribution requirements a student is obliged to explore the major fields of learning in freshman and sophomore years. At this stage a student has to choose his courses from all broad areas of knowledge viz. humanities, social sciences and natural sciences and there is an increasing tendency to prescribe such courses that are common to all. By 'majoring' or 'concentration' requirements the student's choice of courses is restricted by stages to the area in which he proposes to get his degree. Each student 'majors' in any particular subject and each department through the 'majoring' requirements restricts the choice of courses. Such restrictions do not begin before the sophomore year except perhaps to a minor extent for natural science students. With emphasis on General education these are postponed to the junior and senior years largely. Under these restrictions a student is first required to make a divisional concentration i.e. to select most and usually not less than half of his courses from the division in which his speciality lies and then to go likewise to departmental concentration. The fundamental idea is to start with a breadth of knowledge to widen the intellectual horizon, and then go on deepening until a student finally 'majors' in any one subject. Specialization thus follows chronologically

General education and becomes dominant in the last two years but even in these later years, part of a student's work lies outside his subject usually in the related subjects. In his choice of electives a student is guided throughout by his faculty adviser whose concurrence is often required as that of the department before he can be registered for any course.

In the teaching of a course there is great emphasis on the development of critical and imaginative faculties required for independent judgement and creative work and hence the classroom approach to a subject is analytical rather than informative and factual. For the same reason there is less emphasis on lectures and more on discussions in small groups. A few universities and colleges have almost given up the class lectures altogether. For each course, particularly in the first two years, texts are prescribed that contain not only seminal writings but also certain works of the great thinkers. Readings are assigned in the classroom out of these texts and classwork consists largely of discourses based on such readings. This makes the students explore knowledge at first-hand through their own readings, come into contact with master minds and then arrive at independent judgement through participation in criticism and appreciation. The pursuit of knowledge becomes a cooperative activity of the teacher and students alike in which both gain while the preparatory self-reading has the further advantage of making whatever a student learns an integral part of his acquisition. Obviously, under this method students have to work hard and for every hour that they spend in the classroom, they may have to work to participate in it intelligently at least for as much time outside. For discussions the students are grouped into groups of fifteen to twenty. In addition, wherever lectures are given the classes are large, maybe even a couple of hundreds. The teacher often uses a microphone for such large classes that are intended to cover by lectures the basic and the more fundamental aspects of a course rather than its outline.

For grading and evaluation, again, there is no uniformity. The most common pattern is evaluation by a teacher of his own students through objective tests, extent of participation in class work, and/or terminal examinations. The system of a comprehensive examination through papers at the end of a year or in the final year is also practised by several universities and for this purpose external examiners are also appointed.

The 'majoring' preferences of the students at present are indicated by the fact that out of some 300,000 candidates who earned their degrees in 1954, as many as 41,000 did so in Business and Commerce, about 35,000 in one or the other of the remaining Social Sciences, 22,000 in Engineering, 57,000 in Education, 12,000 in English and about 10,000 in Law. The number in other subjects was less than 10,000 in each and

surprisingly relatively very few in the Natural Sciences, e.g. only 293 in Botany and less than 2,000 in Physics. Even the number of graduates in Medicine is relatively low at some 7,000, with another 4,000 graduating in Pharmacy.

All universities provide for graduate studies leading to the master's and doctorate degrees. Even the liberal arts colleges that have normally undergraduate programmes sometimes make provision for such advanced studies. In both cases the faculty members engage themselves in research. Requirements for advanced degrees vary from institution to institution but the prescribed programme at the master's level ordinarily involves intensive specialisation in a particular field in which the candidate may also present a dissertation. The minimum period for a master's degree is one year of graduate study but in a number of fields it is two years. The degree of Doctor of Philosophy requires in most universities three years of work at the graduate level and involves comprehensive knowledge of the field of specialisation for which courses are required and an independent investigation. The departments regard research as their major responsibility and most institutions of Higher education are continuously engaged in research activities through their faculties and graduate students. This tends to raise the tempo of undergraduate studies to a new and higher level through impact with persons engaged in fundamental or applied research.

Although the primary concern of the colleges is with formal studies, with classrooms in the centre of the educational process, an attempt has been made to harmonize what students experience outside the classroom with the goals of liberal education. This is particularly true about the nature of residential arrangements and extra-curricular programmes. Most colleges have chapels and attendance for residents is sometimes compulsory. Students live in small residential units with common dining and recreation centres and clubs without any segregation by subjects or classes. Contact in these small residential halls, each having about fifty residents, is lively and dynamic and promotes cross-fertilization of ideas. Such places may be either fraternities and sororities or dormitories but in each case responsibility is shared almost entirely by residents and their elected representatives. This tends to inculcate not only a spirit of self-discipline and self-reliance but equally fulfils the ideal of a university as a community with a strong 'we' feeling along with the authorities. While fraternities and sororities are managed almost independently of the college by their members, the only 'official' even in a dormitory is a resident counsellor who is one of the graduate students. Social and cultural life within the

residential unit is variegated and rich and must be aiding an all-round development of the residents.

Colleges have strong students' unions with their own premises providing various amenities and cultural activities. Their budgets are controlled entirely by them and they often have enough finances to organise rich variegated programmes throughout the year. Many of them have their own papers carrying honest criticism and constructive suggestions relating to college affairs, its management, policy and programmes. Quite a few have their own broadcasting stations. A fair amount of popular lectures and discussions on subjects of scientific and topical interest are arranged throughout the year almost every week. All these must be tending to widen intellectual horizons and promote diverse cultural interests, and a truly catholic appetite, besides developing leadership and a spirit of cooperation. The widespread practice among the students of supporting their studies financially adds another balancing factor for the promotion of a well-rounded personality. The limited extent to which the college students depend on their parents or guardians for financial support during their studies in spite of relatively heavy costs is rather surprising. Most students take jobs during summer vacations, and these are seldom literary or intellectual and may be just ordinary manual jobs as that of a driver or milkman, machine operator etc. Many do part-time work for an hour or two, say in the college canteen, dining hall or kitchen as waiters or cleaners etc. during college working days. In addition to the feeling of self-reliance, and the dignity of labour that such work may inculcate, it has its own educational value of giving practical experience of human relations, industry and common living. In addition to self-earnings there are a large number of aids and grants available for Higher education that are given by State corporations and the universities and colleges as well.

While all these features point to college students having larger responsibilities for their support and running their institutions, the American colleges and universities are assuming an increasing responsibility for the welfare of their students. The office of Dean of Students is unique in this respect and is responsible for much counselling and guidance to the student in both academic and personal problems. It is paternal in its approach but formal in its structure. In one university we were told its responsibilities include faculty advice for programme selection, assistance to students in financial problems, leadership in development and fulfilment of curricula, advice to students in personal problems, and even decisions with regard to the continuance

or otherwise of unsuccessful candidates. Almost everywhere the Dean interprets the faculty and the college to the students and carries back their problems and viewpoints to bear on administration and programmes. An office like this can in itself play a vital role in liberating young minds and making responsible students.

CHAPTER IV

Some Patterns of General Education Programmes

The patterns of General education programmes are diverse in content, duration and method of administration. In some institutions the programmes are restricted to the first and second year of the university studies, in other institutions they are administered even in the third year of a four-year university course for the first degree. In some institutions the student has a choice in the selection of courses in the broad areas of knowledge: Humanities, Social Sciences and Natural Sciences, whereas in others the courses are fixed and no choice is possible. Further, in some institutions, the courses are taught by the members of staff of the different departments, each one teaching the portion dealing with his field, whereas in other institutions they are handled by a separate staff working under a separate department of General education.

The number and range of programmes, courses and activities now stamped as General education are so great that the term itself has no precise meaning. It will therefore be best to describe the different patterns in each of the eight institutions visited by us.

Columbia College Programme

The Columbia College introduced in 1919 a year length course in Contemporary Civilisation as a requirement for all freshmen. The value of this course was so impressive that the departments concerned with humanistic studies: English, Philosophy and Languages, developed in 1927 a course in Humanities for all freshmen. It is in no sense an adaptation of the Contemporary Civilisation concept and format to the field of literature. Its form and emphasis are its own. Later, a second year of Humanities was added. This course, comprising one term each of Fine Arts and Music, was an outgrowth of several years' experimentation. A course in the area of Natural Sciences was required to complete the set. A two-year General Science course was introduced in 1934 and continued until the Second World War. It was not

reinstated after the war for it did not elicit the general enthusiasm from the Faculty or the students that the Contemporary Civilisation and Humanities courses commanded. At the present time the student satisfies his General education requirement in Science by selecting two courses from conventional introductory offerings in each department.

Courses : The Columbia College offers a four-year course leading to the B.A. degree. Of these, two years are of required courses and two years are of elective courses. The required courses are: a two-year course in Humanities, a two-year course in Contemporary Civilisation, a two-year course in a foreign language, a two-year introductory course in Science and a half year course in Health Education, English Composition and Physical Education.

The Contemporary Civilisation and Humanities courses form the core of the liberal arts curriculum required of all students in the College regardless of their academic and vocational objectives.

In the first year of the Contemporary Civilisation course, the political, economic and philosophical developments in western civilisation that have helped mould the present-day institutions and ideas are examined. In the second year, the course focuses on the 'seminal' ideas of our civilization and on the problems and trends basic to an understanding of contemporary society.

The Humanities 'A' course contains studies in their entirety of a number of masterpieces of European literature, including Philosophy and Historiography, emphasising these books as outstanding works of literary achievement but more concerned with the important ideas they contain than with an analysis of them in terms of style or genre. In the second year, the Humanities 'B' course provides an understanding of the masterpieces of Music and Fine Arts through discussion and analysis of the artistic qualities and significance of representative works in Music, Painting, Sculpture and Architecture.

It is the purpose of these courses "to attempt to suggest the inter-relatedness of certain traditional disciplines, to develop in the student a sense of relevancy and an awareness of the alternatives facing him The courses seek to jar the undergraduate out of provincialism, out of complacency, away from misconceptions and preconceptions he is heir to and to provide him, not with solutions, but with a multiplicity of questions." Columbia's General Education Programme "aims at stimulation rather than specialisation, comprehension rather than coverage, perspective and values rather than encyclopaedic knowledge."

Some General Education courses may be postponed to the third and the fourth year in the case of students such as those who want to major in Chemistry or have to take a test for a medical course.

Method : In the Humanities and Contemporary Civilization courses the students are given reading assignments. There are no formal lectures. The classes are small and contain from 20 to 25 students. The emphasis is on discussions. The student is forced to examine actively the subject matter before him, to grapple with ideas and to question his own conclusions as well as those of others. The instructor may make clear by suitable explanations various points in the text or arising out of the discussions. Each teacher has his own technique of discussion and he has considerable autonomy over his own sections. He grades his own papers and examines and conducts his own class throughout the year. The book or the text itself is at the centre of the course and the reading of secondary material is not encouraged. The idea is to involve the students directly in the great works.

Staff : The courses in Humanities and Contemporary Civilization are taught by persons drawn from the different departments in that area e.g. the staff of Humanities 'A' course is drawn from the departments of English, Philosophy, Greek, Latin, French, German, Spanish and Russian. There are no special General education teachers. The inter-departmental cooperation is an important condition for success as also the willingness on the part of the teachers to handle subjects other than their own special field. While the teachers are free to run the discussion in their own way, some common understanding is arrived at regarding the subject matter and the approach to it at the meetings of teachers in different areas which are held frequently.

Amherst College Programme

In 1946, after a searching re-examination of the philosophy and purposes of liberal education, a faculty committee made recommendations which led to the adoption of the present Amherst curriculum. It was decided that these courses should not be of the superficial "survey" type but should deal with areas of subject matter sufficiently limited in scope to allow some vertical penetration. Keeping in view the necessity of familiarising the student with the three broad areas of Humanities, Social Sciences and Natural Sciences, the following curriculum was devised.

In the first year all students are required to take : Physical Science and Mathematics, European Civilization, English and Humanities and a foreign language.

In the second year the students are required to take the following subjects :

- (a) Chemistry and Biology or Evolution of the Earth and Man.
- (b) Problems in American Civilization.
- (c) Three courses from :
 - (i) Literature—English or foreign.
 - (ii) Philosophy, Religion, Classical Civilization.
 - (iii) Fine Arts, Music and Drama.
- (d) A course in Public Speaking.
- (e) An elective subject.

In Physics topics are selected from Mechanics in such a way as to develop an understanding of the ideas which led to Newton's formulation of the laws of Mechanics and the theory of Gravitation and thence to indicate the impact which the Newtonian Synthesis has had on the subsequent development of Science and Philosophy. Selected topics from Electricity and Optics are then introduced and, combined with the previously developed topics in Mechanics it is shown how the present conception of the structure of matter is arrived at.

In Mathematics, topics are selected from Analytical Geometry and Calculus to show how this science has arisen as a powerful independent discipline and how it has influenced the development of Physical Science.

In the Chemistry-Biology sequence, a study of substances, their structure, properties and reactions is made. Relation of Chemistry with Biology, Physics and other sciences is indicated. In the second term an introduction of biological principles is given and this study is integrated with the Chemistry studied earlier.

In the course on Evolution of the Earth and Man, a review of the evolution of the earth and the changing landscape, particularly in relation to the appearance and history of living organisms followed by the evolution of man with his developing cultures is given. In all science courses laboratory work is included.

The course in European Civilization is a survey of European History and an introduction to the Social Studies. The course on Problems in American Civilization does not provide a Survey of American history, but centres attention on a limited number of topics which are treated from various viewpoints such as the political economic and cultural. Generally about 12 problems are discussed every year and the problems vary from year to year.

The course in Humanities is intended to serve as a contribution to the student's general education, and the books are chosen to illustrate certain important stages in the development of Western culture. The reading list varies somewhat from year to year and consists of Greek literature, the Old Testament, works selected from Medieval, Renaissance and Modern periods.

The first year course in English is a course in English composition. The second year course aims at teaching critical reading of Literature. A small number of works—prose and poetry—are read critically. A course in advanced composition is also given as an alternative.

The courses in Philosophy consist of an Introduction to Philosophical Literature, Ethics and Logic.

The courses in Religion are : Introduction to Religion and an alternative course in the Old and the New Testaments. The former discusses the origins and nature of religion, basic beliefs and practices of Confucianism, Hinduism, Buddhism, Judaism and Islam as reflected in their Scriptures and institutions, the Christian heritage as reflected in the New Testament and the Christian classics. Subjects like Basic Catholic and Protestant doctrines and practices ; religion and the modern mind : modernism, humanism and the new orthodoxy are discussed. In the alternative course on the Testaments the foundations of the Hebrew-Christian tradition in the literature and life of the Old Testament and the foundations of the Christian tradition in the literature and life of the New Testament are discussed.

The courses in Fine Arts deal with the elementary technique and design and a survey of the history of arts ; those in Music deal with elementary theory of Music and an introduction to musical literature and applied Music : piano, organ, voice, violin etc. The courses in Drama deal with introduction to theatre studies and principles of dramatic production. The course in Public Speaking deals with the fundamentals of oral expression.

Method : Lectures and discussions are combined. In some subjects such as Humanities, there are only discussions in small classes consisting of about 20-25 students whereas in other subjects, both formal lectures and discussions are held.

Staff : Some of the subjects are taught by the members of staff of the departments concerned whereas other subjects are taught by staff members drawn from that particular area, e.g. the course in Humanities is taught by the Departments of Classics, English, French, German, Italian, Spanish, History, Philosophy and Religion. The staff holds

regular weekly meetings, and the variety of professional background among its members has made for a good deal of both enjoyable and fruitful discussion. It has been customary for teachers to take turns in preparing background material in the planning of assignments and in making up tests. The whole group participates in preparing the longer examinations.

Harvard University Programme

The Committee on General Education was established in January 1946 to implement the programme recommended in *General Education in a Free Society*.

In the Report of the Committee on Objectives it was explicitly stated that in the General education courses there should be careful selection of the subjects to be studied, on the assumption that though much is therefore left out, such selectivity would make possible a more searching analysis of the subjects dealt with, an analysis which should attempt to relate the problems of books studied to a wide range of human ideas and experiences.

The programme of General education was started on an experimental basis in 1946, and it was decided that the period of experimentation should continue "until the methods and materials have been perfected and teaching staff so assembled as to justify extending the programme to all students." Near the close of the first year of the new courses, a committee of the Harvard Student Council prepared and administered to over three-fourths of the students registered in the General education programme an elaborate questionnaire. The overall findings were, however, completely sympathetic with the aims and methods of the new courses. The principle of studying relatively thoroughly a few representative topics from a given broad field of knowledge was approved decisively by students more accustomed to the usual survey type of course. A similar questionnaire was also issued by the Student Council Committee in 1948. This source of information on student opinion has proved to be exceedingly helpful in the development of the courses. In view of the success of the experiment, the number of courses was increased in 1948 and 1949 and the Faculty voted for establishing the programme on a permanent basis beginning with the year 1949-50.

The pattern in operation is as follows :

The General Education Plan requires a total of six courses and a compulsory General Education 'A' which is a half course.

Elementary General Education Courses in Humanities, Social Sciences and Natural Sciences

Students are required to take three elementary courses in General Education, one to be chosen from each of the three areas : Humanities, Social Sciences and Natural Sciences. These elementary courses are to be taken during the first and the second years. Other variations such as the taking of four elementary courses or spreading the course over three is permitted under certain circumstances.

Second Group General Education Courses and Plan of Distribution

Since the General education programme is designed as a supplement to, but in no sense as a substitute for special education, the regular requirements for concentration in the various departments or in special fields are not affected. Students who have taken three elementary General education courses must take three more from the second group to achieve the specified total of six. In selecting such additional courses, the following conditions are to be observed :

- (a) The additional courses must be outside the student's department of concentration.
- (b) The total programme of six courses (including the elementary courses in Humanities, Social Sciences, and Natural Sciences) must be so selected that not more than two of the six courses are in the area in which the department of concentration falls.
- (c) The additional courses may be chosen from the second-group courses offered by the Committee on General Education, or from the courses offered by the several departments. To help the student in making a balanced selection, the Committee on General Education, after consultation with the departments, has prepared an Advisory List of department courses deemed particularly suitable for General education.

The following are the full term and half term courses in the different areas :

HUMANITIES

Elementary Courses

(F.C.—full course; H.C.—Half course)

1. Epic and Novel (F.C.)
2. Crisis and the Individual (1) In Drama and History (2) In Biography and Fiction (F.C.)
3. Ideas of Good and Evil in Western Literature (F.C.)
4. Ideas of Man and the World in Western Thought (F.C.)
5. Interpretation of Literature (F.C.)

Second Group Courses

1. Classics of the Christian Tradition (H.C.)
2. Classics of the Far East (H.C.)
3. Types of Art : The Representation of Nature in European and Asiatic Art (H.C.)
4. Language (H.C.)
5. The Spirit of the Renaissance (H.C.)
6. Art in the Culture of Ancient Greece (H.C.)
7. Introduction to the New Testament (H.C.)
8. New Testament Thought and the Mind of Today (H.C.)
9. Religion and Culture (F.C.)
10. An Approach to Poetry (H.C.)
11. Roots of Western Culture (H.C.)
12. The Reading of Poetry (H.C.)

THE SOCIAL SCIENCES

Elementary Courses

1. Introduction to the Development of Western Civilization (F.C.)
2. Western Thought and Institutions (F.C.)
3. Natural Man and Ideal Man in Western Thought (F.C.)
4. Ideas and Social Change in European History (F.C.)
5. Freedom and Authority in the Modern World. (F.C.)

Second Group Courses

1. History of Far Eastern Civilization (F.C.)
2. Human Relations (F.C.)
3. Interpretations of American Institutions (H.C.)
4. Economics for the Citizen (F.C.)
5. Introduction to the Civilization of India (H.C.)
6. Classic Political Theory and the Democratic Process (H.C.)
7. Democratic Theory and its Crisis (H.C.)
8. The Structure and the Growth of Law (H.C.)
9. Fundamental Human Rights (H.C.)
10. Principles of Statistical Inference (H.C.)
11. Introduction to the Civilization of the Middle East (H.C.)

12. **Western Influences in "Underdeveloped" Countries (H.C.)**
13. **Classics of Historical Writing : Eighteenth Century to the Present (H.C.)**
14. **Introduction to Latin American Civilization (H.C.)**

THE NATURAL SCIENCES

Elementary Courses

1. **The Physical Sciences in a Technical Civilisation (F.C.)**
2. **Principles of Physical Science (F.C.)**
3. **The Nature and Growth of the Physical Sciences (F.C.)**
4. **The Process of Research in Physical Science (F.C.)**
5. **Principles of Biological Science (F.C.)**
6. **The Biology of Organisms (F.C.)**
7. **Problems of the Earth and the Universe (F.C.)**

Second Group Courses

1. **Organic Evolution (H.C.)**
2. **Human Behaviour (H.C.)**
3. **Cosmography (H.C.)**
4. **Basic Concepts of Mathematics (H.C.)**
5. **Modern Physics and its Philosophical and Historical Background (H.C.)**

Yale University Programme in Directed Studies

The Yale College requires every student going in for the B.A. or B.S. degree to elect a full year course or two-term courses in the same subject in each of the following fields in order to have a strong foundation and to ensure a comprehensive view.

1. **English**
2. **A foreign language (ancient or modern)**
3. **History, Ancient or Modern, or History of Art or History of Music**
4. **The Social Sciences**
5. **The Natural Sciences or Mathematics**
6. **Classical Civilization or Latin or Greek or Philosophy or Religion.**

In the process of satisfying the requirements of distribution, the student must, in his first two years, group his courses to meet the requirements of concentration and to prepare himself for his major work in his last two years of the college by taking three-year courses in one of the three areas : Humanities and the Arts ; History and the Social Sciences ; the Natural Sciences and Mathematics.

While the bulk of the students take this programme which is known as the standard programme about 120 students chosen from amongst those who apply for it, are taken up in the Programme of Directed Studies. The purpose of this programme is "to explore the values, both for the student and the University, of a carefully organized combination of specially designed courses as a common intellectual basis for the work of the last two years". It was also thought that "courses specially designed to reinforce one another and to encourage close collaboration among instructors would produce a valuable sense of the inter-relationships among the various disciplines."

In the first year the student in Directed Studies must take Philosophy 1, Literature 1, and History of Art 1. For the other two courses he will normally take Mathematics I or Science from one group and Language from a second group.

Philosophy is placed at the centre of the curriculum as an organising and clarifying course with Literature and History of Art on the one side and Science on the other. The course in Philosophy, called "Problems of Knowing" is devoted to considering the validity of the approaches to knowledge offered in the other four courses and attempts to develop in the student a unified view of the possibilities of learning offered by all forms of knowledge that man has achieved, including religion and the various modes of philosophic thought.

In the second year, three courses are prescribed: Philosophy II, Studies in Society, and History I. To fill out his schedule of five courses, the student may take in addition a language, science or in some cases an elective. In the second year he concentrates on the fundamental problems of value: to study Ethics and to grasp the role of man in the social world.

All courses in the programme are taught by a combination of lecture and discussion methods, and the groups are usually of 20 to 25 students or even less. In the science courses students have also to do laboratory work every week. The courses in this programme cut across departmental divisions, and across the limitations of historical periods and particular nations. The literature course for instance is not restricted to English literature; it includes readings in the Old Testament, in Greek drama, in Homer and Virgil, and from time to time readings in continental European literature. It draws its teachers from various departments: English, Classics and the Modern Languages. The course in Studies in Society utilises the methods and the personnel of the departments of Economics, Sociology and Political Science.

Instructors in this programme meet frequently together ; they know what part each course is supposed to play in the student's total programme and can thus make cross-references to work being done in other courses.

A series of inter-departmental lectures and discussions is also arranged. The topics for discussion are so arranged that they will aid and encourage the student in interrelating the various fields of study in which he is engaged. To give a few examples : "Ways of Knowing in Art, Science and Philosophy", "The Interrelationship of Art, Science, Literature and Philosophy in the 18th Century."

After two years of Directed Studies the student can select his subjects for the third and fourth year and get B.A. or B.S. degree.

The contents of the different courses are briefly described below :

Courses of Instruction

First Year

Philosophy I, Problems of Knowing

An introductory examination of the kinds of knowledge claimed by common sense, by empirical science, by mathematics, by poetry and art, by religion, and by philosophy ; and discussion of their criteria of truth, their relative value, and their independence.

Literature I, Elements of Literature

Study of the three formative elements in the literary background of English Speaking peoples ; the Old Testament ; Greek and Shakespearean tragic drama ; classical and modern epic literature.

History of Art I, Introduction to the History of Art.

Mathematics I, Mathematical Analysis

An introduction of basic mathematics including a development of the number system and elementary calculus.

Physics I, Elementary Atomic Physics

The classical background and the physical and chemical bases of modern atomic theory are presented. Topics considered include quantisation of atoms, behaviour of light, relativity-theory, nuclear transmutations and energy.

Science I, Concepts of Physical Science

The basic ideas of physics and chemistry which have a profound influence on modern culture and civilisation. Historical and philosophical in method.

Second Year

Philosophy II, Problems of Value

A critical study of moral value, with special attention to such contrasting ethical systems as those of Aristotle, Kant, Mill, Dewey, and

Christianity ; followed by a more comprehensive study of values and responsible evaluation within a broad philosophic framework pertinent to the American and other societies, and with special attention to a major contemporary philosopher such as Whitehead, and a major contemporary theologian such as Tillick.

History I, The Individual in Europe and America from the Middle Ages to the Present

After describing man's relatively unfree condition in medieval society, the course traces the various liberalizing forces which brought him to a relatively free condition in modern times. Political freedom and the economic, religious, intellectual and technological developments affecting the essential freedom of the individual are discussed. The liberal ideas associated with the rise of individual freedom and the changing philosophies of the State ; the quest of the individual for security and social security through State action are discussed.

Studies In Society II

An investigation of the materials, scope and techniques of some of the social sciences, including the application of these techniques to the analysis of a problem. After a preliminary examination of the nature of Sociology and Economics, their basic concepts, methods, and the problems most central to their respective studies, the student proceeds to apply the techniques learned under the cooperative direction of a sociologist, an economist and a political scientist to a case study of contemporary New Haven (the town where the Yale University is situated).

Studies In Society A, Economics and Politics

An investigation of the materials, scope, problems, and methods of Economics and Political Science. Emphasis is placed upon historical context and the relationship among institutions in the modern, complex society.

Studies In Society B, Behavioural Science

An investigation of the materials, scope, problems and methods of Anthropology, Psychology and Sociology. Relationships between the general psychological and social aspects of behaviours and the more special aspects covered on Studies In Society are constantly borne in mind. Students will apply the background gained in both these courses to a case study of contemporary New Haven. Restricted to Directed Studies students who also take Studies In Society.

Language II

Students in Directed Studies who have not gained distributional credit or have not completed their language requirements, a course in

modern language, must take a language course in their 2nd year. If they are beginning a new language, they may find it possible to take an intensive course equal to two normal courses.

Science II, Earth Sciences—Astronomy

First term—Geology

Second term—Astronomy or Meteorology—Oceanography

The course in Geology treats of the earth as a geologic body and as a habitat for life ; the rocks and minerals that constitute the earth ; the origin and occurrence of mineral resources important to industry ; the processes that continually alter the earth's surface ; the geologic history of the earth, its climate, and the succession of plants and animals that have inhabited it, including man. Practice in the use of maps is also given.

The astronomy part treats of the earth as an astronomical body and goes on to consider the planets and the stars. It includes the description and mechanics of the solar system ; the physical constitution of the sun, stars and nebulae, the structure of our galaxy, origin of the solar system and related problems.

The meteorology—oceanography part treats of the liquid and gaseous layers of the earth, their interaction with each other and with the land, nature of weather, climate, tides, ocean currents, life within the oceans and application of all this knowledge to human activities such as agriculture, fisheries and navigation. Laboratory work, field trips and visit to the planetarium are a part of the course.

Science III, Biological Science

An inquiry into the nature, organization, diversity and functioning of living organisms. Emphasis is placed on the biological principles and the significance of Biology in the modern world.

Each laboratory exercise represents a project in which, through observation and experiment, a student will be able to reach logical conclusions relative to living organisms and life-phenomena.

The College of the University of Chicago Programme

In 1931 the College of the University of Chicago began an experiment based on the idea that complete undergraduate education should accomplish two ends. It should give all students a common, critical understanding of the major fields of human knowledge and their inter-relationships (General Education) and that it should develop the intellectual powers and provide the special knowledge appropriate to the interests and plans of each student (Specialized Education). In pursuance of this ideal, in addition to the great development of research

at the University of Chicago, there has also been an unusual interest and activity in General education. The problem of developing and teaching a curriculum in General education was assigned to a separate college faculty of teachers and all Specialized education was assigned to the faculties of the Divisions and Schools. Over a decade of separate development, these programmes revealed their powers and their limitations and in the programmes that have been developed in recent years, the faculties of the University have brought together the principal elements of their separately developed curriculums in general and specialized education and a system of general courses which cuts across many special fields and consists of a careful selection of fundamental materials and ideas in the Natural Sciences, Social Sciences and in the Humanities.

The University offers three main approaches to the Bachelor's Degree.

- A. A programme consisting of three years of general studies and a year of tutorial work leading to the degree of Bachelor of Arts. It does not involve specialization in any particular department but the student has an opportunity through participation in tutorial programme to pursue more thoroughly an individual interest.
- B. A programme consisting of three years of general studies and one year of study in the School of Business, the Law School or the Graduate Library School leading to the degree of B.A.
- C. A programme combining general studies with specialized work in one of the four fields: Humanities, Biological Sciences, Physical Sciences and Social Sciences, leading to the degree of B.A. or B.Sc. depending on the special field. The courses which are considered useful for both General and Specialized education are usually the basic courses in various fields such as Chemistry, Physics, Art, Literature etc.

Courses in General Studies : Students normally register in courses concurrently and normally take four examinations in each academic year.

(a) *Humanities 1, 2, 3.* (Three sequential one-year courses)

These courses have three main objectives. The first of these is to acquaint the student with a considerable body of the best works in the fields of literature, music and the visual arts. The second is to develop skill in the art of interpreting these works, and the third is to give the student an understanding of some of the general principles upon which critical judgments and evaluations of the arts are made and to develop some skill in the written application of these principles.

Humanities 3, is designed to combine a study of criticism of the arts with training in writing. A student who wishes to combine study

of a second year of a foreign language with preparation in the knowledge and competence sought in Humanities 3, may register for a Humanities 3, class in which the works selected for discussion are chosen from the literature in the language in which he wishes a second year of work. Similarly, a student who is particularly interested in either the visual arts or music may register for a section of the Humanities 3, course in which art works or musical compositions supply the materials for critical evaluation.

(b) *Social Sciences 1, 2, 3.* (Three sequential one-year courses)

These are not intended to survey the Social Sciences. Our purpose of the sequence is to teach something of the historical development of democratic institutions, ideas and values. A second purpose is to give the student a scientific understanding of his own and other cultures, and of how the individual comes personally to learn and embody the norms of a given culture. A third purpose is to analyse and clarify the kinds of problems involved when society or the individual tries to apply theoretical knowledge to social action.

In Social Sciences, which deals with the development of democracy in America, the student extends his knowledge and understanding of a Society with which he is already familiar and personally identified. In Social Sciences 2, a scientific study of personality and culture helps the student to locate himself and his society in relation of both similarity and difference to other individuals and cultures. Finally in Social Sciences 3, the student returns with greater knowledge and insight to a study of the policy problems of his own society.

(c) *Natural Sciences 1, 2, 3.* The programme consists of a one-year course in the physical sciences (Nat. Sc. 1.) that assumes a knowledge of elementary algebra and plane geometry, a one-year course in the biological sciences (Nat. Sc. 2.) that assumes a knowledge of the physical sciences and an ability to read and analyse scientific literature equivalent to that developed in Nat. Sc. 1; and a one year course in more advanced and specialized study of a few selected problems in both the physical and the biological sciences and their interrelations (Nat. Sc. 3.), for which Nat. Sc. 1 and 2 are pre-requisites. The aims of the Natural Sciences programme are: to acquaint the student with some of the major solutions to problems that man has formulated concerning the physical and biological worlds; to acquaint the student with representative examples of different kinds of attack upon scientific problems, that is, with some of the patterns of inquiry which characterize the physical and biological sciences, and lastly to develop in the student those skills and habits which are helpful in the comprehension and evaluation of scientific thought and conclusions.

Besides textbook material scientific papers are read and discussed. The papers drawn from the literature of the natural sciences are arranged in several series. Each series represents a major scientific problem, illustrates major modes of attack upon such problems, and states one or more important solutions to the problem. Discussion centres round questions such as these : What is the problem to which the investigator addresses himself? What is his conception of an adequate solution? For such a solution, what kinds of data are required? How are such data treated in order to arrive at a solution? etc. There are not only lecture-demonstrations but also actual laboratory work in these courses.

(d) *English*. A one-year course in writing designed to help students write clear, effective prose.

(e) *Mathematics*. A one-year course in mathematics to train the student in the elements of scientific discourse and their use in the statement, organization and communication of ideas (logic, deductive theories), to increase his insight into the nature and forms of mathematical thinking (abstraction, symbolic expression, structure of mathematical systems); and to supply him with certain concepts, facts and methods basic to exact science (relations and functions, number systems, analytical geometry, trigonometry).

(f) *Foreign Language*. An elementary one-year course in a particular foreign language.

(g) *Organisation, Methods, Principles of Knowledge*. A one-year course in the methods and relationships of the fields of knowledge. Science majors who do not take Nat. Sc. 3 may take this course.

(h) *History of Western Civilization*. A one-year course in the history of Western Civilization.

(g) and (h) are two courses designed to integrate the other studies. At least one of these two courses is an essential requirement. Of the 14 courses mentioned above, at least 10 must be taken by a student in General Studies.

Staff. The College faculty is composed of members drawn from different divisions and those who belong to the College. The former in addition to taking part in the General Studies programme also teach specialised courses in their own division and conduct research work. The arrangement is flexible and the members taking part in General Studies programme from any particular division may change from year to year. The courses may be framed by the various divisions but it is the College faculty that has to approve of them before they are administered.

Methods. In the General Studies, the method of teaching adopted varies from subject to subject and while the emphasis is on the discussion method, formal lectures are not completely discarded. There are groups of 20 to 25 students in each discussion group. In these small groups, free and active discussion is not hampered by the fear of displeasing or the hope of pleasing, for the students are judged by comprehensive examinations at the end of the course and these examinations are neither prepared nor graded by his teachers.

University of Wisconsin's Programme of Integrated Liberal Studies

Students enrolled in the College of Letters and Science of the University of Wisconsin have the choice of taking up the 'B.A. General Course', the 'B.S. General Course' or the 'Programme of Integrated Liberal Studies' all of which are designed to give the student a general and a professional education. In the B.A. General course the student has to take the following courses :

1. English Language and Literature
2. Foreign Language
3. United States History and Institutions
4. One of the groups A, B or C in each one of which there are specified courses in Humanities, Social Sciences and Natural Sciences. These have to be so selected that the requisite distributional credits are obtained in each of the three areas.
5. Physical education
6. Military training
7. Major study and electives to bring the total to 120 credits.

All the above courses are expected to be completed by the end of the second year.

The third plan inaugurated in 1948 and known as 'The Programme of Integrated Liberal Studies' offers "General education through a specially designed, closely knit sequence of courses which by unity of plan and inter-relation of content make meaningful and coherent the diverse elements of a liberal education." The courses of the programme deal with divisions (Humanities, Social Sciences, Sciences) of knowledge rather than with specific departments. Courses within a division draw together materials and techniques from several contributing subjects, e.g. the first course in sciences called 'The Physical Universe', includes materials from astronomy, physics and chemistry.

The divisions are further integrated with one another by means of cross references in lectures and assignments, and through discussions and essays.

The courses are briefly described below :

First Year

1. Humanities

- (a) Greek and Roman culture : A comparison of Greek culture at its height with Roman culture at its height ; readings in translation and some lectures in classical art.
- (b) Mediaeval and Renaissance culture : The transitions from Graeco-Roman civilisation to modern European civilisation.

2. Social Studies

- (a) Early man and his Society : How man appeared and how he developed culture, social groups, and religion to adjust himself better to his environment and to his fellowmen.
- (b) Transition to Industrial Society : European Society, and the effect on it of new techniques leading towards industrialism.

3. Sciences

- (a) The Physical Universe : A study of the structure and composition of the universe, the nature of time, matter, energy and light, with attention given to the methods of scientific investigation.
- (b) Earth Science : The nature of the physical earth as the home of man ; its materials, surface features and atmosphere. Illustrations of the methods by which knowledge of the earth has been obtained.

4. Composition

- (a) Theory and Practice of Writing : An introductory course in College composition, with writing subjects related to the courses of the programme.
- (b) Nature and Function of Language : Continued practice in writing, with lectures and readings in the nature and function of language.

Second Year

1. Humanities

- (a) European Culture 1750—1850 : The literature of life and ideas in England and on the continent, with supplementary lectures on painting, music and philosophy.
- (b) Recent American culture : American literature from 1850 to the present, with supplementary lectures on American philosophy, art, and architecture.

2. Social Studies

- (a) Modern Industrial Society, U.S.A. : Studies of its economy in relation to its political organisation and social philosophies.
- (b) The International Scene : A comparative study of the types

of government and economy of the present day world, with attention to the courses of international cooperation and conflict.

3. Sciences

- (a) Biology : The adaptation of plant and animal life to environments and the development of functional variations.
- (b) Biology : Continuation of the above course with the introduction of psychology and heredity.

In addition to these compulsory courses the student can take electives during both the first and the second year.

Instruction is imparted through lectures and discussions ; laboratory work is done in science courses. There are groups of about twenty students for the purposes of discussion.

Specialists in certain technical scientific fields, such as engineering and agriculture, usually cannot complete both the ILS requirements and special course requirements within the minimum four years. Further in science subjects such as Physics and Chemistry, the sequential nature of the required work makes it difficult to fit it all in before the end of the fourth year and study of a fifth year is necessary. In view of this difficulty this programme is being reconsidered to enable the students to major with above mentioned subjects in four years.

The members of the staff giving these courses are drawn from the different divisions and while they lecture or hold discussion classes in the programme of ILS they also teach in their own divisions.

The Programme of the University College of North Staffordshire at Keele

The University College of North Staffordshire founded in 1949 is an innovation in English University education in that its object is to impart both to Arts and Science students an understanding of the fundamental concepts of the sciences and the humanities. This is achieved by the four-year degree course structure which has for its objective the countering of the tendency towards specialisation that has been the dominant feature of university education in the U.K.

The course occupies four years -- a year longer than most other degree courses in England, but the intending social worker or teacher can combine degree studies with those for the Diploma in Education or in Social Studies, and graduate after four years with a diploma in addition to his degree.

An original educational innovation made at Keele is the Foundation Year Course, taken by all the undergraduates entering the College. There are three main themes. One term is devoted to 'Man and his Environment' which concerns man as a living organism and the world

in which he lives. Another term is devoted to 'The Heritage of Western Civilisation.' In it the legacies of the ancient world are surveyed, not only in science but also in literature, art and philosophy. There follows a brief survey of the Middle Ages in Europe to prepare the way for the period of the Renaissance and the Reformation. The student is introduced to the Age of Discovery in the sections of science and philosophy. The final term of the year is given over to 'Industrialized Society', in which an account is given of the social, political and economic changes brought about in the 19th and 20th centuries. This leads to a description of modern institutions, and to a discussion of some of the problems which confront us today.

After an internal test at the end of the Foundation Year, the undergraduate proceeds to his degree studies which extend over three years. The Foundation Year course provides a basis upon which the subsequent studies are built, and the entire four years form an integrated system of study.

For the degree of B.A. the student must study two subjects at principal level and two at subsidiary level. Of these at least one must be a science subject and at least one a non-science subject. Students taking a Diploma in Education take only one subsidiary subject but they must maintain the 'spread of subjects'.

Method : The formal lecture method is followed in all classes including the Foundation course—but to stimulate the freshmen to take an active part in the lecture course, the Foundation course class is divided into small discussion groups of about six students which meet once a week to discuss general topics suggested by the lecturers. A senior member of the staff presides over each discussion group in order to guide its deliberations. The main aim of the discussion is to encourage the students to think and read for themselves about the topics dealt with in the lecture course. A student is often asked to prepare and read an essay or to give a brief talk to the other members of the discussion group.

The lecture course is supplemented by tutorial classes, e.g. an undergraduate whose main interests at school were scientific would take tutorials for a term each in three subjects (e.g. Mathematics, Physics, Chemistry) with which he had some familiarity, and tutorials throughout the session in two others, an arts subject such as History, and a social science such as Economics.

Staff : The Foundation Course lectures are delivered by the senior members of the staff from the different departments. In the discussions too, the senior member of the staff takes part jointly with two junior members from the other areas than his own e.g. if the senior member is a scientist, the other two members are from the fields of humanities and social sciences.

Massachusetts Institute of Technology Programme

The Massachusetts Institute of Technology, realising how important human relationships are in any society and in order to develop in their students those first rate human and social values which must accompany technical competence if an individual is to make his maximum contribution as a citizen, has evolved its own four-year programme of General education.

The programme is based upon the theory that to achieve a well-balanced professional education, a student should pursue the study of humanities and social sciences simultaneously with the studies in science and engineering. The programme is constructed in such a manner that it will give the student some breadth in the humanities during his first two years and some depth in a more limited area of either the humanities or social sciences in his third and fourth years. It aims to give the student an introductory knowledge of the most important issues, ideas, periods and events of the past, selected on the basis of their relevance to the world today. It aims to emphasise the interrelation of the various humanities and social sciences as elements in human experience and to introduce the student to the process of critical thought as applied in the humanities and social sciences.

Practice in written and oral expression is an integral part of the two-year basic programme.

Courses: In the first year every student takes a course in Western civilization and in the second year either a course entitled 'The United States, Men and Issues' or one entitled 'Modern Western Ideas and Values'.

Each student in his third year must elect one of the nine fields given below as an area for further study. Three subjects taken in the third and fourth year must normally fall within this area while the fourth will usually be a distributional subject in a different area. The nine fields are as follows :

- | | |
|---------------------|----------------------------|
| 1. History | 6. Political Science |
| 2. Literature | 7. International Relations |
| 3. Modern Languages | 8. Labour Relations |
| 4. Music | 9. Psychology. |
| 5. Economics | |

Under each of these fields a number of courses are given from which the student can select the requisite number. To give an example:

under Literature the following courses are offered:

1. Introduction to Literature or Literary Theory
2. Literature of Greece
3. Non-Western Literature
4. English Drama before Ibsen
5. Nature of Poetry
6. Shakespeare
7. Modern Drama since Ibsen
8. 19th Century American Literature
9. 20th Century American Literature
10. Russia and the West in Modern Russian Literature.

(No : I is obligatory and two others have to be selected from Nos : 2 to 10.)

There is a special Humanities Staff consisting of 43 members of which 29 are professors or assistant professors. The amount of time devoted to these studies is roughly three hours a week.

The performance of the students in these subjects is counted in the final evaluation of the student and the subjects are on par with the technical subjects.

CHAPTER V

Approach to General Education in Indian Universities

Present Structure of Higher Education

Students who come up to a college in India at present pass through a Secondary school education which is generally of six years' duration. Three of these six years are usually at the High school level and constitute a unit. There are, however, some Higher Secondary schools in which the High school stage consists of four, and not three years but these are exceptions and not the rule.

The existing pattern of a degree course at an Arts, Science or Commerce college consists generally of four years, comprising two years in the Intermediate class and two years in the degree class. These two halves are often unrelated to each other. Such a lack of correlation has been on the increase in recent years as, owing to financial reasons, purely Intermediate colleges have begun to come into existence in large numbers. In some universities, although the pattern is the same as above, the Intermediate classes are altogether distinct as they come under the jurisdiction of a separate Board and in such instances, co-ordination is quite difficult to achieve.

Successive Commissions, dealing with Higher education in India, have reiterated the recommendation that a change in the above pattern should be effected resulting, amongst other things, in the first degree course consisting of three years of continuous and integrated instruction in one place. The Delhi University has had such a pattern for some time now, but the example has not been followed by the rest of the Indian Universities.

The Secondary Education Commission of 1952-53 has again dealt with this matter in conjunction with the duration and reorganisation of Secondary school structure and made the two following specific recommendations.

"The present Intermediate stage should be replaced by the Higher Secondary stage which should be of four years' duration, one year of the present Intermediate being included in it."

"As a consequence of the preceding recommendations the first degree course in the University should be of three years' duration."

That the first degree course at Indian universities in the faculties of Arts, Commerce and Science should be so reorganised as to be of three years' duration has now been accepted in principle by the Inter-University Board of India and by the University Grants Commission. Consequently steps are being taken to implement this recommendation in many areas, although it seems obvious that lack of finances will delay the implementation in some places. In fact, all universities are now faced with this problem and are either engaged or will be so in the near future in redrafting their courses so as to switch over to a three year degree pattern sooner or later. Thus, this is an opportune time to take stock of the contents also of our education at the degree level.

In the context of the work of the present team, it is important to recall that the Secondary Education Commission has recommended that "Social Studies" and "General Science" be taught at the Secondary school with a view to "endeavour to give the students not only a sense of national patriotism and an appreciation of national heritage, but also a keen and lively sense of world unity and world citizenship" and "ensure that science becomes a part of liberal education and an instrument for the appreciation of the special characteristics of modern culture." It is hoped that this new orientation will soon be given effect to in Secondary schools and will in fact lay the foundation for General education at the college level. The students thus handed on to colleges by Higher Secondary schools in the future setup, if properly trained, will emerge as graduates approaching the ideal type which universities all over the world generally aim at producing.

It is commonly acknowledged in India today that one of the defects of the present system has been to produce university graduates, who are, though reasonably well informed in regard to factual knowledge, often not adequately trained to meet new situations and quite frequently turn out to be incompletely developed personalities. The Public Service Commissions all over the country and educationists who come across a fair cross-section of fresh graduates have expressed this view in many different contexts. We have taken this background into account and the alternatives and courses suggested in this chapter are intended to remedy such defects and each one of them may serve as a basis for experimentation.

We have seen the American and British programmes in action. The scope and purpose of the courses therein, as we have been able to gather, have been described in Chapter II. Their contents and the main patterns into which they fall are briefly described in Chapter III. We have endeavoured constantly to keep in view our own conditions and courses and we have set ourselves the task of making a realistic and practicable approach that is likely to thrive in our colleges. The suggestions given are neither exhaustive nor inflexible. They are only illustrative and indicative. It is hoped that they will serve as useful guides to the institutions in India which are interested in finding a solution to the problem of over-specialisation at the college level.

Outline of Scheme

There is of course no one unique programme to achieve our purpose although all programmes aimed at achieving balance in our system of Higher education must share certain common features. We have tried to find out and emphasise in our plan which follows, these common aspects even though the programmes may differ in detail at the various universities. All such programmes should be directed to give a breadth of knowledge, in order to widen the intellectual horizon of our university and college students; to expose them to various areas of knowledge so that they may best discover where their interests lie; and to provide for a broad understanding that they would later need as common citizens of the country. In giving such breadth, however, depth should not be sacrificed altogether and education should not be reduced to a smattering of fragmented knowledge that will hardly serve any purpose. It should be deep enough to provoke thinking. The criterion of flexibility is also important together with that of breadth and depth, especially for meeting individual needs and particular situations.

Another important consideration that we have kept constantly in view is that in introducing such changes, the transition should be smooth and should put no such strains as may lead to a break-down at any stage. Many fresh problems may have to be faced during the transition and in the absence of practical experience any sudden departures may not be easy to assimilate. In view of this transitional problem we have drawn out two schemes—one as the main scheme that we ardently hope will be adopted sooner or later in all universities and the other an alternative scheme with which a beginning may be made almost immediately. The two schemes may also be looked upon as containing an optimum and minimum programme respectively.

Main Scheme

(a) What should form the common core of studies for all students preparing for their first non-professional degrees? Two considerations are important in this respect, viz : (i) their common needs and (ii) their pre-college studies. We presume that these students will be entering the colleges and universities after eleven to twelve years of education for a three-year degree course. During the last year of their pre-college education they will have studied General Science and Social Studies and at least one foreign and one Indian language. They will have reached such a level that although not familiar with analytical work they can gradually be introduced to it. Their common academic needs would be an exposition of the broad areas of knowledge and of training in skills of communication. As future citizens they would require an understanding of the world of nature, of contemporary society and of the world of human ideals, aspirations and values. A knowledge of these three areas and the ability to read and express effectively one's ideas and thoughts should, therefore, form the common core of education. Hence we recommend that General education covering basic studies in the fields of (a) natural sciences, (b) social sciences and (c) humanities, together with training in communication skills be made compulsory for all undergraduates studying for a degree in a non-professional faculty such as the faculties of arts, science and commerce.

(b) How much time should be devoted to such broad education? The danger is that if it is too little no effective purpose will be served by covering a broad area rather thinly, or in a fragmentary manner. A student might gain nothing in such a case and the little time devoted to it may simply be wasted. At the same time there is a limit beyond which it should not step in order that there may be left sufficient time for a study of the particular discipline or disciplines that a student might take. Keeping both these considerations in view, we have come

to the conclusion that the time for such education in a programme of three years of undergraduate studies should generally be one-third of the aggregate. Let us further clarify this point by taking a concrete example. Suppose that at an average, students are required to attend during these three years 24 periods per week. This means that 72 weekly periods are available for all studies in the three years taken together. Out of this time we suggest that one-third, i.e. 24 weekly periods be devoted to required courses in General education in three years in the aggregate.

(c) How should the General education programme be distributed over the three years? Should it come towards the end of the three-year programme i.e., should the last year be devoted exclusively to General education and the first two years to the particular subjects? This would be contrary, as already explained, to the purpose of introducing such education. Should it then come entirely at the beginning, i.e., in the first year? For instance, in the college at Keele the first year is devoted to such a Foundation Course. There is something to be said in its favour but in our set-up it has certain serious disadvantages. First, it would appear that General education courses are meant for the first year that is now being added to the two-year degree course to adopt a programme of the three years and would therefore appear to be something in the nature of a pre-college education. Secondly, the students at this level will not be properly equipped to appreciate certain aspects of the course, unless it remains rather elementary. Thirdly, the continuity of the process of General education and its complementary aspect with respect to specialised education would be lost. On account of these considerations we feel that the General education programme should be well distributed over the various years and not be confined to any single year. It should, however, be dominant in the beginning and should then taper off in later years when specialisation should become dominant. Thus while the bulk of the General education programme should come in the first year, it need not be confined to it or to any other year. We recommend that 15 periods out of 24 per week of General education be in the first year and the remaining nine periods be either, (i) so distributed that six periods are in the second year and three periods in the third year, or (ii) all the nine may be in the second year. The former alternative would enable certain issues to be better considered at a more mature stage in the third year whereas under the latter, students would be enabled to devote their final year exclusively to their special subjects and particular disciplines.

(d) For the framing of curricula in the broad areas of knowledge for General education we feel that courses giving an outline of a subject or its scope and main findings would not serve any useful purpose,

Under such courses the teaching would be about a discipline rather than its exposition as it should be. Elementary courses of various disciplines or areas will be wasteful since the students will not be able to go beyond rudimentary concepts of a discipline within the time available for their teaching and will hardly have any knowledge of its subject matter or of its method. We feel that the best approach would be to frame inter-disciplinary courses in the broad areas of knowledge round certain central and leading problems. This would enable a comprehensive examination of certain issues in various areas of knowledge, reveal its distinct methodology and expose the inter-relations of the various fields within an area. Hence we recommend an inter-disciplinary approach within the broad areas of knowledge and problem orientation of courses for the framing of curricula in General education by various universities and are not in favour of survey-type courses in each field. To clarify our approach we have given outlines of illustrative syllabi in each area.

Alternative Scheme

(a) Until such time as the implementation of the main scheme becomes possible, we feel that a beginning might be made by devoting six periods per week in the first year and six periods per week in the second year of the degree course for General education.

(b) These periods should be distributed equally between humanities, natural sciences and social sciences.

(c) In each of these areas, a few half-courses and a few full-courses, say five or six, may be formulated and every student should choose any two half-courses or one full-course from each area. All students preparing for a non-professional degree will thus be required to take six half-courses or their equivalent. A half-course will run for about sixty periods a year inclusive of discussions and demonstrations, if any.

(d) These courses are to be designed as broad presentation of issues in man's physical, social or cultural environment and not as introductory or elementary courses in relation to any particular discipline.

(e) The objective of these courses is not the teaching of a subject or subjects at an elementary level, nor is it to be even a broad survey of a subject or subjects but the development of interest in them through the realisation of their role in life and an acquaintance with their general methods. In clarification of these ideas, a few illustrative syllabi are given in each area.

Professional Degrees

A knowledge of human relations and nature of contemporary society, cultural heritage of man and scientific progress on a broad front is essential for a professional specialist, be he an engineer, technologist, doctor, or any other, to understand and appreciate the world in which he works and lives. We, therefore, recommend that efforts should be made to give a quantum of General education as outlined above, after suitable modifications, where necessary, to all students preparing for their first professional degree. In this respect we would like to refer to the programme dealing with the education of engineers at the Massachusetts Institute of Technology, described in chapter IV.

General Recommendations

(a) Here we discuss the various proposals and recommendations that are of general application to all the above plans. The first issue that we have examined in this context is whether there should be an examination in General education courses. We fear that in the absence of any examination in General education courses, our students may pay scant attention to such courses even if these are required and attendance at these is made compulsory. This is really unfortunate but it is so and we cannot ignore this fact. We, therefore, recommend that passing an examination in the prescribed General education courses be made a required condition for the first degree. Such examinations may be held either at the termination of each course or in a comprehensive manner at the completion of the entire programme.

(b) We feel that method is as important as content in General education. In order that such knowledge becomes a part of a student's acquisition and is not merely lumped for passing an examination and hence soon to be forgotten, it should be acquired by a student's interested activity rather than imparted by a teacher. Such interest can be aroused by helping the students to find knowledge through their own reading of materials and discussions in small groups. We recommend that for every two lectures delivered, there should be at least one discussion arranged in small groups.

(c) Suitable reading material for General education courses will have to be prepared and its availability is essential to the successful implementation of any scheme. These readings should incorporate source materials and the writings of master minds.

(d) The success of these schemes also rests on the availability of personnel: We recommend that there should be a careful selection of teachers in each college and university for the operation of the programme of General education. Such teachers as are genuinely interest-

ed in it and willing to carry it out, should be chosen for these programmes. An adequate proportion of senior teachers should be associated with the programme.

(a) NATURAL SCIENCES

Several approaches to this problem have been tried so far. There are institutions where the students are made to take one or two courses in the branches of science, viz: a course in chemistry or physics or botany or geology and so on. The argument has been that even if a student studies one branch of science, he gets an insight into the scientific method. Since such courses treat only one subject, with little relation to the other sciences and since very often they are handled by the departments as if they were introductory courses for more advanced work later in the subject, students even under the most favourable circumstances come out of such courses with considerable knowledge of a single subject but with only a limited understanding of science as an intellectual method or of its impact on modern life.

In other institutions the efforts to broaden instruction have led to the development of the survey course. Such courses which became popular in the late twenties and thirties include material from physics, chemistry, geology, astronomy and mathematics in the physical sciences and a similar range of subjects in the biological sciences. The objective in view is usually not achieved by such courses because of their superficiality and while the student learns a mass of miscellaneous facts he gains little real comprehension of its laws or the methods used in their derivation.

With the realization of the fact that it is not necessary to cover a large amount of material to achieve the goal in view, that selectivity rather than coverage is required, enterprising educators have devised new courses for the non-specialist wherein a few selected topics, laws or problems in two or three sciences are intensively treated. In the chapter on 'Some Patterns of General Education Programmes' mention is made of the courses of institutions which we have visited. It has also been indicated in that chapter that there are considerable variations in the content and organization of these courses.

In devising a course in natural sciences in the General education programme, it would be worthwhile to bear in mind that many of the undergraduates possess no special scientific aptitude. Further, many of them may not have taken science and mathematics in their school at all. It is therefore essential that a few topics are taken and discussed well. Such topics should illustrate the concepts of science and the unitary

nature of science and its mode of development. This may be illustrated by taking the course prescribed by the North-Western University in the United States wherein the subject matter of seven sciences is organised around representative problems.¹ The lecture on energy, for example, deals with the following :

Astronomy—the dynamic characteristics of all bodies of the universe; the radiant energy of the sun as our principal energy source.

Botany—the restoration of our energy supply through photosynthesis.

Chemistry—release of heat energy by chemical changes.

Geography—effect of earth topography on the availability of several forms of energy.

Geology—the accumulation of available energy in geological deposits.

Physics—the laws of thermodynamics, energy transfer, and conservation.

Zoology—animals as heat engines.

But such a treatment would require suitable teachers who are capable of teaching the subject matter of several sciences. Because of the difficulty of getting such teachers and because of the limited financial resources, a start may be made in the immediate future with one or two of the courses suggested in this section, depending on the resources available, but bearing in mind that while the technical requirements of a university may be satisfied by prescribing a course, the effort may still be a waste unless it is administered in the spirit in which it is envisaged in this report. A course in natural science should lead to the cultivation and appreciation of the scientific method and the ability to use it.

Before we discuss the tentative syllabuses, a word or two may be said about the method of administering the courses in general. Prof. Conant, the distinguished ex-President of Harvard University discusses in his book 'On Understanding Science' the problem of the scientific education of a layman and stresses the importance of the historical approach. He himself gave a course at Harvard and used the case history method. He writes in the above book that "the advantages of this method of approach are twofold: first, relatively little factual knowledge is required either as regards the science in question or other

sciences, and relatively little mathematics ; second, in the early days one sees in clearest light the necessary fumbings of even intellectual giants when they are also pioneers ; one comes to understand what science is by seeing how difficult it is in fact to carry out glib scientific reports." He then discusses at length the guiding principles in selecting case histories for a course in the 'Tactics and Strategy of Science.'

The encouraging results obtained at Harvard and some other institutions where this method has been followed has led other institutions to utilise this approach in the teaching of General education courses in science. There is no doubt that in the hands of a competent teacher this method can yield valuable results. We feel that in the teaching of all science courses—even the regular ones for science students, the courses can be made more meaningful and science can be shown as a growing process rather than a mass of uninterpreted facts if the historical approach is followed and it can be clearly demonstrated how knowledge in any particular field has been built up stage by stage.

Some university programmes like that of the University of Chicago lean heavily upon the reading and discussion of the original works of Galileo, Newton, Lavoisier, Darwin, Mendel etc. and the gaps are filled by materials which supply necessary and useful information about phenomenon and conclusions with the economy and in the manner of a good textbook. We feel that with beginners such an approach may not yield fruitful results and the matter might be beyond their comprehension. When the student gets some grounding, he may be encouraged to read some of the original papers of great scientists for then he will be more appreciative of the approach and the contents of such papers. While all efforts should be made to create an interest in science by incorporating interesting material such as biographical accounts, stories of lucky accidents etc., it should always be borne in mind that over-simplification may make the student believe that scientific work is a simple affair and that he knows all about science. This would be bad both for the students and for science.

Lectures, discussions, demonstrations and laboratory work should all be used in the teaching of science. It is the experience of some universities in the United States that a series of lectures by specialists are not as satisfactory as those in which one instructor handles the class throughout the year either in discussion groups or discussion sections. But few have the breadth of knowledge needed in teaching a course which deals with more than one science. Instructors may not be quite at home while handling subject matter other than the one in which they

are trained. We therefore feel that in our universities for some time to come at least, the General education courses will have to be taught by specialists in different fields—each one dealing with the portion of the syllabus falling under his discipline.

In view of the large number of students and the absence of adequate number of teachers, classrooms etc. discussion groups of 20-25 students do not appear to be feasible in the immediate future, but we must emphasise the desirability of increasing the number of discussions and reducing the number of lectures wherein the student is merely a passive listener and not an active participant in the process of learning. In some of our universities there is a cadre of demonstrators who handle only the practicals. Those demonstrators are well qualified and have a master's degree. They may be utilised for handling the discussion groups and we are confident that some of them will be willing to take an active part in such teaching work.

It is essential that the science staff dealing with General education courses should meet frequently to exchange ideas, discuss new experiments, teaching material etc. We strongly urge that the approach should be entirely inter-departmental with a view to having maximum integration of the subject matter.

The lecture demonstrations which are an essential part of all science teaching are sadly neglected in our universities. It is not uncommon to find the lecturer's table without any demonstration apparatus. Even the standard experiments are often not demonstrated for various reasons such as lack of equipment, or unwillingness on the part of the lecturers or the non-availability of the classroom to set up experiment before the lecture and so on. While this is undesirable in any science teaching, it would be more so in the case of a General education class where for various reasons it may not be possible to give enough laboratory work to students. It might be profitable to cite here the practice of Colgate University. "In this university where instruction in science is conducted in small groups of 25 students, all sections convene in a large amphitheatre for several hours on one afternoon or week when members of the staff recapitulate the development of a scientific law by lecture, by discussion and by a complete redoing of the original experimentation. These class sessions and the accompanying demonstrations are so elaborately and carefully prepared and conducted with such skill, that the observer actually feels a participant in the search for new knowledge."² We urge some such approach to the question of lecture demonstration.

2. McGrath E. J. Science in General Education, 1948, p. 393,

The lecture demonstrations, however, will not be enough. The student must himself do a few well chosen experiments in the laboratory. But these should not be 'cook book' type of experiments. Here the approach should be of the type followed at Amherst given below :—

"In our laboratory work there are no complicated, set experiments with detailed instructions. We take the simplest possible situations and lead the student to formulate his *own* problem, however simple. He must describe what he does and how he interprets his work in his own words, in a blank note book which does not put words in his mouth. He must make certain judgments on his own initiative : What measurements should be taken ? How many measurements ? How to present this and derived information in intelligible form ? etc. We make it clear that many alternatives are possible and entirely "correct"; that there is no one "right" way which the teacher "wants". The removal of this firm pillar (what teacher "wants") on which the student has always leaned without ever gaining the strength to stand on his own intellectual feet, comes as a profound shock. However, some seeds of independence of thought and decision are planted which will begin to develop the necessary strength and which, in the climate of subsequent courses and studies will help him to assume the erect posture our metaphor implies."³

Having discussed the general aspect of courses in sciences and their administration we suggest the outlines of a few syllabuses. These are only tentative suggestions and we hope that the different universities or a group of universities will ultimately draw up their own patterns of courses in detail depending on their resources and administer them as they think suitable.

1. We suggest for main scheme the following courses :

First Year.*	Second Year
A course in Physical Sciences	A course in Biological Sciences
or	or
A course in the History of Science	A course in Earth Science and Astronomy.

In the alternative scheme, as the quantum of time is less, we suggest that one of the above courses may be taken over a period of two years.

3. Amherst College Bulletin: Jan. 1955, Vol. 44, No. 3, p.6.

*A course in mathematics may be given as the third alternative.

It is suggested that the courses should be taken by all students irrespective of whether they are majoring in the science subjects or in subjects in humanities or social sciences. Further, we suggest that in the case of a science student the courses chosen should be different from the group in which his special subject falls. Universities may draw up special rules regarding the choice of groups.

A course in physical sciences should illustrate the methods and philosophy behind scientific inquiry and must examine the growth of ideas in physical sciences with relation to their impact on man's thought and his ways of life.

A course in biological sciences should centre round a functional study of living organisms : how they secure and prepare food and eliminate waste ; how they transport materials within their bodies ; how their activities are co-ordinated and controlled; how they perpetuate themselves ; how they inherit from their ancestors ; what ecological relationships govern them ; and what biological principles enable the individual and the community to live most healthfully. Although the processes are to be studied from a general biological standpoint, those aspects which relate to man should be particularly brought out.

A course in Earth Science and Astronomy should attempt to convey the immensity of geologic time, consideration of some of the physical and biological events during the millions of years of earth history, the study of the modern physical environment and the physical processes at work, the vast mass of space and the laws governing the planetary motion, the fascinating story of the bodies other than the earth in the universe and their discovery, composition, etc.

The aim of the course in the History of Science is to present in a historical sequence a factual knowledge of the more important aspects of science, to inculcate in the student an appreciation of the scientific method, and to cultivate a philosophical, analytical and creative habit of mind. Simpler and more concrete ideas lead to more complex and abstract ones like Relativity and the Atom and science is shown to be a developing rather than a static discipline. The historical method facilitates the interpretation not only of the various branches of science but also of science itself with other fields of knowledge. Also, a study of History of Science has an intrinsic value in its own right as one more aspect of the history of civilization. While the courses can be organised successfully through formal lectures, discussions, laboratory demonstrations and pictorial aids, a certain amount of handling of apparatus when possible can further enliven it. In giving the course there need not be any worrying preoccupation with historical exactitude ; the im-

portant point is to give the student a feeling of the delight of investigation and discovery. Presented in this manner, it can be of particular value for those who are not going to take science as a profession.

Outline of Courses

Physical Sciences

Conservation of Energy—Kinetic theory.

Newton's Laws of Motion; Universal gravitation, Nature of light.

Forms of energy; Nature of chemical change; Concept of element through the centuries; The Periodic Table; Atomic structure and atomic energy.

The growth of Organic Chemistry and its impact on Society.

Philosophical implications of Modern Physics.

(Original writings of Newton, Lavoisier and other scientists may be studied from time to time. Further, a few typical cases may be illustrated by the case history method.)

Biological Sciences

Characteristics of living organisms. Conditions necessary for life. Cell theory. Sex and reproductive cycle. The concept and mechanism of evolution. Biogenesis vs. abiogenesis. The causes and control of disease. Plant and animal metabolism. Enzymes, vitamins and hormones. Study of Inheritance; gene theory of heredity. Plant and animal breeding. Nature vs. nurture. Improvement of the race. Inter-relationships between plants, animals and men. World population and food supply.

Earth Science and Astronomy

Composition, structure and the age of the earth; geological events and the development of life on earth; glaciation; mountain building. Volcanic activity and seismology. The origin and occurrence of mineral resources. The processes which continuously alter the earth's surface; the climates. Maps and map reading.

Mechanical and physical problems of the Solar System. Physics of Stars and stellar evolution. Milky Way. Galaxies.

History of Science

What is Science? The Origins of Science. Science in Antiquity. The Renaissance. Copernicus and the Planets. Bacon and the Experimental Method. Galileo and Kepler. Harvey's discovery of the circulation of blood. The development of Scientific Instruments in the 17th Century: Microscope, Telescope, Air Pump, Thermometer, Barometer, Pendulum Clock. Newton. The Scientific Revolution of the 17th Century and its effect on other branches of thought. The birth

of the Physical Sciences. The birth of the Biological Sciences. Scientific developments of the 19th Century. Cosmography. The discoveries of Pasteur and Koch and their repercussions on public health and surgery. The origin and evolution of life. Darwin's Origin of Species. Knowledge of Cell Structure, Sex and Reproduction. Mendel's Concepts of Heredity. The birth of Genetics. Plants and Animal Physiology, Photosynthesis, Enzymes, Vitamins. The development of power. The Atom. Current notions of Relativity. The Methodology of Science. The impact of Science on Modern Life.

(b) SOCIAL SCIENCES

It may be useful to make a few general observations as a preface to the curricula for General education in the social sciences proposed in this section. The proposals are neither exhaustive nor inflexible and have been framed in broad terms, mainly with an illustrative purpose, in a form consistent with the overall structure suggested in the beginning of this chapter. We have also borne in mind the need for indicating a part of the General education of a student irrespective of whether he chooses to specialise in any of the social sciences or not.

We are aware that apart from broad and integrative fields like history and philosophy, the study of social sciences in our universities is still in the process of coming of age. We do not suffer from the evils of over-specialisation in this field. While economics has now attained the status of an important social science as a result of the developments in university curricula during the last forty years and more, and considerable advance has been made in recent times in the the fields of sociology and political science, a significant ground still remains to be covered in these and other social sciences like anthropology, psychology and so on. Growth of specialised work and training of specialists in all the social sciences still remains our prime need. And it is further underlined by the fact that such specialists and their work will continually and increasingly be required for assisting the handling of manifold problems of our rapidly developing society.

It is not necessary, however, to rule out the desirability of broad understanding in emphasising the need for specialisation in a narrowly circumscribed field. Breadth and depth are in no way antithetical. On the contrary, they can be mutually helpful and enriching. Background of broad-based education will, we believe, help a specialist in his particular field in its proper perspective and proportions and provide him with the necessary balance, in the form *caution in generalisation*, to the *precision* he might legitimately claim in his chosen field. Thus healthy specialisation, undisturbed by lopsided understanding or departmental

chauvinism, can grow and fulfil our manifold needs in a satisfactory manner.

But apart from the students who may proceed to specialise in any of the social sciences, we have had to consider those for whom education for the first degree may become the termination of their formal education or those who may proceed to specialise in a discipline in the other areas of knowledge. And together they will constitute a very large majority. As members of various social, economic and cultural organisations, they will be continually called upon to take decisions of varying degrees of significance. As citizens of a democratic country, they will contribute to the shaping of its policies. As individuals belonging to the small though growing section of the community that has had the benefits of Higher education, their thinking and judgement will command some prestige with their countrymen and will influence them. To provide them, therefore, with the rudimentary wherewithals of clearer thinking and responsible, critical and discriminating judgement in the social field seems to us to be an important responsibility of the social scientists, a responsibility which they owe to their subjects themselves. This seems to us to be a major channel in a democratic country through which specialised social sciences, tempered with social sympathy, can find their way to fruition in the realm of social action. We therefore feel that the course in the area of social sciences must form a part of the common educational experience of all students.

A word may be added here regarding a point of terminology. A distinction is often made in the context of General education programmes between "social sciences" and "social studies". "The distinction attempts to contrast the factual, experimental and systematic scientific constructions, which may be called the social sciences, from the interpretative materials from this body for teaching purposes. It is this latter, of course, which constitutes the social studies. It is abundantly clear that even in the terms of this distinction, there is an intimate relation between the social sciences and the social studies. Moreover, the distinction is particularly important if one is considering the field of General education..... In stating that General education must be concerned with the social studies rather than primarily with the social sciences, we are simply following the lead given by the definition of General education itself."⁴ We accept this view but we have not actually adopted the term "social studies" only to avoid possible confusion, in the context of our country, with programmes under the same

⁴ Levi A. W. : *General Education in the Social Studies* : American Council of Education, Washington D. C. 1948, p. 10.

title operating at other levels of the educational system. We may further point out that in realising any programme of this kind, competition between departmentalised social sciences shall have to be replaced by cooperation among them. "Society remains the subject of social science concern and *social understanding* one of its chief goals. No single social science has a monopoly upon social understanding. Social problems are at once economic problems, political problems, sociological problems, historical problems and also problems of value. Not until economists, political scientists, sociologists, psychologists, historians and moralists sit down at a common table and talk a common language appropriate to their common concern, will a General education in social studies or, indeed, any education in social studies worthy of the name be a real possibility."⁵ The statement brings out, we think, both the technique of curriculum construction and revision as also the spirit of institution in any programme of social studies in General education.

The following curriculum is suggested for the Main Scheme in our recommendations:

First Year :

Pre-Vedic and Vedic Culture - Ancient Indian Polity - Manu-Rajdharm - Kautilya - Dravidian Culture and Contribution of the South - Contributions of Islam and the West - Indian Society ; Indian Constitution - Historical Background - Socio - Cultural Setup and Economic Bases - Fundamental Rights - Changes in the Constitution ;

Problems of Federal Polity - Centre and the Units - Inter-State Relations - Public Opinion and Political Parties ;

Divisive and Cohesive Forces in Indian Society - Caste, Class, Religion, Language - Social and Cultural Tensions and Conflicts - Cultural Diversities and the Problem of Unity ;

Structure of Indian Economy - Economic Development and Social Justice - Economic Planning - First and Second Five-Year Plans - Socio - Cultural Factors and Economic Development - Impact of Technology - Problems of Public Administration - Centralisation and Decentralisation ;

India and the World—U.N.O.

Second Year

Democracy vs. Totalitarianism - Liberalism - Nationalism - Fascism - Socialism - Communism - Economic Systems - Capitalism and Democracy - Socialism and Democracy - Nature and Significance of Co-operation - Co-operative Commonwealth - Welfare

State - Technics and Civilisation - Critique of Religion - Language and Culture - Problems of Social Change - Ideas and Social Change - Economic Determinism - Marxism - M.N. Roy, Humanism - Sarvodaya.

Third Year

Meaning of Freedom-Aspects of Freedom-Freedom and Authority-Individual and Society-Freedom and Power-Freedom and Reason-Truth-The Problems of Knowing-Freedom and Morality.

Some broad considerations emerge in the construction of curricula in social sciences in General education. Such construction is possible in various ways. An approach, often adopted, is the "Problems Approach" which, while providing scope for the specialised preoccupations of different disciplines, contains significant possibilities of integration. The "Historical Approach", in tracing the origins of contemporary society, can also make a significant contribution to the understanding of its present nature and suggests the possibilities of bringing the social and cultural heritage to bear on its present predicament. It must however be pointed out that such an approach can be fruitful only if it is critical and discerning rather than revivalist or idolising. The temptations to idolise the past will be far too many, especially in the present with all its troubles and difficulties; and the historical treatment shall have to be free from the lure of such compensatory gains. That history, in the peculiar context of our country, can become a divisive force is a fact which cannot be lightly brushed aside. Thirdly, there is the approach of treating society as a unity and aiming at its systematic description. In this age of deliberate "social engineering" which often seeks to be comprehensive, this approach finds its reflection in a variety of competing syntheses, seeking to discover the driving forces of social change and to inspire and sustain social action calculated to bring about such a change. We therefore feel that a treatment of different "ideologies" is essential in a course in social sciences, as also a treatment of the older or traditional synthesis supplied by religion. And linked up with these should be the understanding of different value judgements and the resultant preferences expressing themselves through a variety of choices and decisions in the social field.

The curriculum proposed by us under the Main Scheme in our recommendations seeks to combine these approaches. Beginning with the historical origins of the Indian society, it brings the student to the point of acquaintance with its present basic problems in a democratic milieu.

*This may also be done in the Second Year if it is desired to limit the entire course to the first two years only.

The treatment of modern Indian society can start with the Indian Constitution as the concrete embodiment of Indian democracy, and the problems posed by it, and open out from there into the socio-cultural and economic fields as the essential dimensions of a democratic society. The course during the first year is rounded up by a discussion of India's place in the World and the United Nations Organisation. The treatment during the first year is thus largely historical and descriptive and the analytical approach is brought in to a limited extent. During the second year, the treatment will be mainly analytical with a number of competing syntheses being at the centre of the discussion. It will be rounded up by a comprehensive discussion of the process of social change and a critical presentation of different viewpoints found in the realm of social action in the country. During the third year, which represents the apex of the pyramidal structure, we have provided for a discussion of the fundamental value judgements underlying the different syntheses, and a treatment of the problems of knowing. The latter is important in order to help the student appreciate the complexities of social "facts" and their often being "freighted with one's preferences and emotional meaning." We have submitted freedom and truth as the basic values forming the common concern of all social sciences and have provided, in the context of the discussion of the various controversial viewpoints surrounding them, for a treatment of morality.

It is quite possible that the course proposed by us may have left out a good deal to be desired. It may even be argued that our entire approach has to be revised. Ours is, as we have already stated, a purely illustrative approach; and the rough framework in outline, presented here, shall have, to be hammered out into a suitable shape through innumerable strokes by competent hands, so that it may fruitfully serve the purpose of General education of the future citizens of our nascent democracy. As a matter of fact, we believe that such striking shall have to be a continual process carried on in the light of growing understanding and experience.

We propose the following courses in social sciences for the Alternative Scheme recommended by us :

Social Sciences I —*Problems of Modern India** (Half Course)

Poverty—Economic Planning—Five-Year Plans—Planning and Democracy ;

Cultural Backwardness—Cultural Tensions and Conflicts—Social Tensions ;

* It would be desirable to make this half course a compulsory course for all students. It may be combined with any one of the following half-courses.

Indian Constitutions—Problems of Federal Policy—Public Administration—Regionalism, Nationalism, Socialism—Welfare State
Social Change and Social Engineering—Role of Ideas—Economic Determinism ;

India and the World—The U.N.O.

Social Sciences II(a) *History of Indian Civilisation*

Prehistoric India—Vedic Civilisation—Buddhism and Cultural Expansion—Classical Period—Islam and Attempts at Synthesis ;

Impact of the West—Renaissance—Ram Mohan Roy and Brahmo-Samaj - Arya Samaj—Rationalist Movements in the 19th Century - M. G. Ranade, Syed Ahmed - National Movement - Dadabhai, Gokhale, Tilak, Gandhi, Nehru - Nationalism and Tagore - Aurobindo - M. N. Roy, Humanism—Sarvodaya.

Social Sciences II(b) *Culture and Civilisation*

Patterns of Culture - Problem of Culture Lag - Culture and Personality - East and West and Problems of Synthesis - Toynbee, Radhakrishnan, Schweitzer - Industrialisation and Modern Civilisation - Technics and Civilisation.

Social Sciences II(c)

Meaning of Freedom - Freewill and Determinism - Aspects of Freedom, Political, Social, Economic, Cultural etc - Freedom and Power - Freedom and Planning - Contemporary Crisis - Rousseau, Hegel, Marx - Decline of Liberalism - Collectivist Ideologies - Socialism - Humanism - Sarvodaya.

Social Sciences II(d) : *Economic Structure and Organisation*

National Income of India - Its Growth and Distribution with special reference to Economic and Social Organisation - Capitalism - Socialism - Economic Planning - Problems of Development of Under-Developed Economies - Economic, Social and Cultural Handicaps.

Social Sciences II(e) : *Social Institutions and Community Organisation*

Social Structures and Social Institutions with special reference to India—Inter-relations between Political, Economic and Social Institutions - Community Organisation - Community Development Projects - their Agencies - Welfare State - the U.N.O.

N. B. Similar half courses may also be formulated with accent on Social Psychology and Social Anthropology.

In the alternative pattern, we have provided for a half course, as Part I, dealing with the problems of contemporary India. This is intended to serve as the common core of General education in social

sciences for all students. Because of the limited time available for social studies as part of the total programme, we had to condense the treatment of the problems to a considerable extent. But we also feel that a comprehensive discussion of the process of social change and the various viewpoints having a bearing on it should also form a part of the common core. In Part II, we have proposed five different half courses any one of which may be selected by the student. Four of these courses put an accent on some particular social science and may contribute to a better understanding of the problems outlined in part I. It must at the same time be emphasised that none of these courses is intended, nor can it be made to serve the purpose of a course in any particular discipline. The treatment in each of them shall have to be broad so as to transgress the limits of particular disciplines and usefully accomplish the purpose of illuminating Part I. We have also included in Part II a course intended to indicate the historical origins of Indian society. We further suggest that half courses of this kind can be framed with accent on social psychology and social anthropology. Treatment of seminal ideas in particular disciplines, indication of their major pre-occupations, exposition of their relation with other fields and an attempt to bring all these to bear on the present problems of Indian society and the process of rapid transformation through which it is passing, may usefully serve, we think, the purposes of General education in social sciences in the particular conditions of our country at present.

We are aware that the treatment of the problems indicated by us may tend to become broad and mostly theoretical. It will be necessary, therefore, to import into the discussion at every stage the available factual material so as to drive home to the student the need for keeping close to the social reality in all such discussions. Even this by itself may not suffice for the purposes of a programme of General education. The student shall have to be made familiar with the social reality through direct contact so that the ideas about social life and attitudes towards it which he may be carrying with him are corrected. He shall also have to learn the methods and techniques increasingly utilised by the social scientists to discover truth. We therefore propose that actual participation by students in social surveys may be provided ; observation visits may be planned ; and opportunities may also be provided to the students to discuss the problems of their surrounding areas and their possible solutions with local authorities and officials. We have seen in one or two cases a fruitful utilisation of this approach and would very much like its being adopted in some suitable manner,

(c) HUMANITIES

When we come to the framing of a General education course in humanities which will include literature, philosophy, history, the graphic and the plastic arts and music, the main difficulty we face is with respect to a basic organizing principle. Unlike the other two areas, namely, the natural and social sciences that have a kind of unity because of a more or less common technique and common objectives, humanities appear to be lacking means of unification because of the variety of techniques and apparently diverse objectives. The technique of painting, for example, is different from that of architecture, and the objective of the literary and non-literary arts (poetry, sculpture, music etc.) does not appear to be the same as that of philosophy. It is possible however to present the courses in humanities in a common framework by emphasising their common preoccupation with values. The arts aim at opening out through a vision of beauty a realm of values, while philosophy is concerned, among other things, with examining all human values and evolving some system of ordering them.

On account of the very nature of humanities, the teachers who will be teaching General education courses in it will generally be drawn from departments concerned with different disciplines, *viz.*, the departments of literature, philosophy, history; the departments of graphic and plastic arts; and the department of music. The courses will mostly be running independently of one another. And the works to be discussed in the classroom can only be a few samples from the vast material available. It will be desirable if their work is not left unrelated to the main purpose of humanities, which is 'to enable man to understand man in relation to himself, that is to say, in his inner aspirations and ideals', by making him aware of the intellectual, spiritual, aesthetic and ethical values expressed in literature, philosophy and the fine arts.

An attempt at giving a unified picture of the achievements of the human spirit in the fields of literature, philosophy and the fine arts could be made by studying chronologically the achievements in all these fields during the various periods. But this would hardly be different from a course surveying an important aspect of the history of culture and civilisation. It could legitimately form part of the courses in social sciences which would add to such a study a new dimension by examining the social significance of the literary, philosophical and artistic contributions. A General education course in humanities aims at enabling the student not so much to know about the works of art as to enjoy those works as unitary wholes, not mainly to survey the growth

of ideas but feel the impact of the minds of master-thinkers by closely studying some of their important works. The historical ramifications are not to be ignored, and the chronological framework will have to be supplied in each case, but the main focus of attention should be on the creative and philosophical works themselves.

Needless to say, the teacher has very limited time at his disposal. He will be called upon to make hard choices from a rich variety of writings and works of art.

It is possible to plan a number of combinations of important writings and works of art and offer them as alternative curricula. We have submitted below a few by way of just indicating what such curricula would look like. We should also add here that we have tried to keep in view the average student who will be taking such a course. The curricula will differ from place to place depending on the abilities of the students, the interests of the teachers teaching the course and the availability of the material. If it is felt that it is possible to put across more varied or more intense work, necessary changes can easily be made.

Since the transmitting of the best in the human heritage will be one of the chief aims of General education courses in humanities, in addition to the study of Eastern masterpieces, the study of Western literature and philosophy and achievements in the fine arts—sculpture, architecture and painting, old as well as new, should form a vital part of the curriculum. In this respect, we stand at a considerable advantage, because of the conditions under which our educational system has grown. While some of the universities in the West are still endeavouring to reach beyond the achievements of the Western civilization, we are in a position to absorb the best of the total human heritage and make the study of humanities in our universities truly comprehensive.

While emphasising that our recommendations are neither exhaustive nor inflexible, we would like to indicate here briefly some of the considerations which, we feel, should guide the framing of the curricula in the three fields : Humanities A—Literature, Humanities B—Philosophy, and Humanities C—The Fine Arts.

Humanities A—Literature

Throughout the ages, literature has played the key-role in the task of conserving and transmitting of the human heritage. The students should be brought in intimate contact with 'Great Works' embodying the visions of master-minds. Works that have stood the test of time, should be presented in their original form and the use of summaries avoided altogether. Abridgements at the hands of those

who have been one with the subject might in some cases serve the purpose. In the case of works like the Ramayana, the Mahabharata and the Shahnama, the use of selected material will be inevitable, but an attempt to preserve as far as possible the continuity of narrative in making such selections may contribute to giving the student a feel of the original genius at work.

The selection of such outstanding works can obviously not be intended for cursory reading. The object of such selection is to enable the student to intensely experience them. The number of books selected is in fact not of primary significance.

It will be necessary to keep a balance between works old and new, Indian and non-Indian. In making a selection of the literature to be studied in this course, three broad divisions seem to suggest themselves.

1. Classics of ancient and mediaeval India. From ancient Indian literature, the work of Valmiki and Vyasa and one of the major Sanskrit plays (Sakuntala, Uttararamacharitam, Mrichchhakatikam etc.) are obvious musts.

2. Classics of the West. From Western literature, the works of Homer and the Greek tragedians, a play by Shakespeare and Goethe's Faust would claim the first choice.

3. Contemporary works. Some of the best work in the various forms of literature (novel, drama, short story, poetry) during the past hundred years could be studied with great advantage, as it would give an idea of how the contemporary complex situation finds expression in terms of artistic beauty. While the outstanding works in Indian literature will form part of such a study, Western literature should be the major area to choose from, as this would also provide the student with standards of judging modern Indian literature which has largely grown under Western influence.

In the curricula that we have suggested below, an attempt has been made to draw, as far as possible, from each of these three areas of choice. We are aware of the fact that the universities will be faced with a difficulty regarding the translations of the classics to be studied. For example, translations of the selections from the Ramayana and the Mahabharata may have to be done afresh. As far as translations of outstanding world classics in Indian languages are concerned, if literary institutes and the universities were to undertake this work, it should be possible to have authentic and readable translations of principal world classics before long.

Humanities B—Philosophy

The main purpose of the General education course in philosophy is to 'impart perspective, the capacity to envisage truth synoptically, from the standpoint of "all times and all existence." ' A survey course would hardly meet the need, as it would not provide for intimate acquaintance with any of the basic writings in philosophy. Nor is it envisaged that it should be a course similar to one offered by those who would be studying philosophy as a special discipline., e.g. a course in the systems of philosophy. Perhaps a selection (of about 250 pages) from Indian and other Eastern writings as well as from those of Western thinkers would meet the need.

Humanities C—The Fine Arts

The main purpose of this course is to expose the student to 'art' experience. Humanities hitherto, even when they formed the main core of liberal education, excluded the non-literary arts, which are as authentic statements of experience as literature and the study of which is an academic discipline as valuable as that of literature or philosophy. The student should not only be enabled to develop skills in *reading* works of literature and philosophy, but also in *looking* at paintings and works of sculpture and architecture and *listening* to music. The aim should be to see that he has 'fed his soul' not only upon great books, but also upon great pictures and great music.

We are not competent to prescribe the organisation or the content of the courses in the fine arts. The universities may devise their programmes with the help of the fine arts faculty, or in the absence of one with the help of experts.

We are of the opinion that even in the initial stages there should be no General education scheme which does not provide even for a bare minimum of introduction to some of the fine arts. Without waiting for the time until the libraries of music records and picture albums and slides are built up, a modest beginning could be made by presenting before the students some of the more easily available prints of rather familiar works of arts, architecture and sculpture, e.g. Ajanta Frescoes, and Rajput as well as Mughal paintings, and the better known work of Abanindranath Tagore ; Sanchi Stupa, Bhuvaneshvar temple, Taj Mahal ; Trimurti ; Gomateshvar and Nataraj. The works of art as, such should be in the focus of attention and the course should not tend to be merely a course in art-history.

As far as the course in the fine arts is concerned, most of the colleges will have to start from scratch. Special help shall have to be provided for, particularly with respect to the building up of libraries

of music records and picture albums and slides. The institutes of arts could cooperate with the universities in making prints of drawings and paintings available for the purposes of this course.

Having made these observations, we give below the curricula under the main and alternative schemes, with the exception of those in the fine arts.

The Main Scheme

First Year

Humanities A :

1. A collection of short stories (English, French, German, Russian, Indian etc.)
2. A modern novel.
3. Selections from modern poetry.
4. Selections from the Ramayana and the Mahabharata.
5. Sakuntala.

Humanities B : Selections from the Upanishads, the Dialogues of the Buddha, the Analects of Confucius and the writings of Plato and Aristotle.

Humanities C : A course in the Fine Arts.

Second Year

Humanities A : A 20th Century play or a collection of one-act plays.

Humanities B : Readings from Al-Ghazali, Ibn-Sina, Aquinas Dharmakirti, Shankara and Ramanuja.

Humanities C : A course in the Fine Arts.

Third Year

Humanities A : A play by Sophocles or Shakespeare.

Humanities B : Readings in Modern Philosophy.

Humanities C : A course in Fine Arts.

An Alternative Scheme

Humanities A :

First Year—

(a) Any one of the following :

- (i) Selections from the Ramayana
- (ii) Selections from the Mahabharata

- (iii) Sakuntala
- (iv) Selections from mediaeval and modern Indian poetry
- (b) Any one of the following :
 - (i) A collection of world short stories
 - (ii) A modern novel

Second Year,—

Any one of the following :

- (i) Homer
- (ii) Sophocles
- (iii) Shakespeare
- (iv) Goethe
- (v) A 20th century play

Humanities B :

First Year—

Any one of the following four courses :—

1. Selections from the Gita ; Readings from Plato and Aristotle.
2. Selections from the Upanishads ; Readings from Confucius and Lao Tze.
3. Selections from the dialogues of Buddha ; Readings from Al-Ghazali and Ibn-Sina.
4. Readings from Dharmakirti, Shankara and Ramanuja ; Readings from Plato and Aristotle.

Second Year - Readings in Modern Philosophy.

Humanities C :

First and Second Year - A course in the Fine Arts.

To put these courses in operation would require the cooperative efforts of teachers belonging to a number of disciplines. Specialists will impart the main ideas of their particular field of study to students most of whom are not to become experts in that field.

The above curricula will indicate that the General education courses in humanities aim at being 'broadly humanistic' rather than narrowly 'literary' or 'philosophical' or 'artistic'. While giving the non-specializing student a substantial introduction to the main humanistic disciplines, they will help the student who wants to specialize in humanities in making his studies more integrated and therefore more mean-

ingful, without much duplicating his work. For example, the student who specializes in the literature of any one language will find that Humanities-A course which make him read Valmiki, Vyasa or Kalidasa, Homer, Shakespeare or Goethe and some of the modern writers is sufficiently different from any of his special courses.

The grading and grouping of the curricula during the two or three years of study will have to be devised as carefully and intelligently as possible. The idea should be to start with comparatively lighter work e.g. narrative fiction in literature, the Dialogues of the Buddha in philosophy. If it is possible to make groupings, which 'make sense', say by cross-linking between the literature and works of fine arts of particular periods, it should always be welcome, but as the works studied are to remain in the centre, there should be no attempt at establishing false or forced relationships for the sake of grouping.

Works which require comparatively more mature understanding can be better studied in the second or third year. This should also be the opportune time for providing the student with tools of making value-judgements. Works of literary and non-literary art have their respective techniques and in the field of each art there are conflicting theories of aesthetics. It will be necessary to see that the student does not take to ready-made valuations and clichés and 'set doctrines', but gets acquainted with as many significant and different approaches to art as possible and is enabled to build up in course of time his own critical apparatus.

Consideration of the intellectual and the ethical, in addition to the aesthetic values implied in works of literature and the fine arts can be made relevant at this advanced stage. This might also be the proper time, when 'problems of human choice, purpose and value,' problems which 'are of great importance in courses in the humanities and the social sciences,' are brought into discussion 'not as they figure in history or in art, but as problems having a centre and intellectual importance of their own'.⁶

The overall aim of General education courses in humanities is not so much to educate the student as to initiate the process of his self-education. In this connection we would suggest the method followed in some of the American universities, of recommending a list of works in literature, philosophy and the fine arts mainly contemporary. These works do not form a part of the regular classwork and are studied by

6. 'General Education in School and College' (A Committee Report by members of the Faculties of Andover, Exeter, Laurenceville, Harvard, Princeton and Yale) p. 94.

the students themselves, but they do form a part of the total work in which they are examined.

(d) COMMUNICATIONS

As we have said before, General education can achieve its objects only if the student possesses the necessary skills to profit from his study of the main areas already indicated. These skills are thus seen to be at once an objective of General education and a pre-requisite to it.

What are these skills? First of all the skills of reading and listening intelligently; the student should be able to discern the purpose of the writer or speaker, to follow the organisation of his ideas, to distinguish fact from inference, to recognise deceptive generalisations and to see through whatever designs, if any, the writer or speaker may have towards him. Secondly, he should be able to speak and write clearly and effectively so that his words are not only understood but carry conviction.

Since the problem of a communication course in Indian universities is complicated by the multiplicity of languages, it is not possible for us to suggest the details of any such course. A few general observations that may be helpful, no matter what the languages that are studied, can, however be made.

Communication is a highly complex process. In devising a course for communication there are certain basic considerations that should be kept in view.

1. The nature of the process: Communication is a social process involving listening and reading, and speaking and writing. It is also an intellectual process; it is inseparable from thinking. Language being the tool of thought, whatever improves one's power over language also improves his ability to think. Further, growth of ability in communication is only one aspect of the growth of the total personality.

2. The psychology of learning, with reference to the development of linguistic ability in the individual: The skills of communication can be learned with conscious effort under competent guidance. Language is learned by using it. The various skills are inter-related and complementary, so that progress in one makes progress in the others easier. The most promising method of developing competence in language would, therefore, be through a programme that provides for inter-related learning experience in all these aspects of the communication process. Course organisation and instruction should be flexible enough to accommodate individual differences. Language attain-

ments of incoming students vary from institution to institution and, in the same institution, from group to group, depending upon such factors as the schools from which they have passed out, the relative proportion of native and foreign language backgrounds, the income level from which they are drawn, and a number of other factors. There is usually a wide range of reading and writing ability. It is obvious that they cannot be handled in the same class and by the same methods. It will be found, however, that a large majority of the students are inadequately equipped in the fundamentals. Before the university can give them a course in techniques of effective communication, it should first provide instruction in the most elementary matters, so as to help them overcome deficiencies in their previous training.

3. The nature of language and its function in society. The relation between language and meaning. Words are not things, but symbols, liable to misuse. The function of language as employed in the media of mass communication :

The chief difficulty that the planners of a course in communication have to face is that of content—there is no specific body of knowledge—as there is in other areas—out of which to construct a course. Yet the skills course must have a content ; for, in the absence of a specific content, the student will be required to choose his own topic—to say something about anything he knows. And what does he know ? The situation is aptly described by a writer as follows :

“A student comes to college with a pitifully meagre intellectual equipment. He has almost no knowledge and very few ideas. And what happens ? He is given a course in speech or public speaking before he has anything to talk about, and a course in English composition before he has anything to write about. “I have nothing to say”, he complains with a sincerity which should command our respect and a pathetic bewilderment that should wring our pedagogic souls. But his lamentation is met with a mixture of scorn and cajolery. “Never mind” we answer. “Say your nothing anyway and mind that you say it in perfectly punctuated sentences, phrases, clauses and paragraphs. If you continue thus to express your vacancy, by the end of the year you will know how to write about anything and everything. You will be able to compose a cogent argument against anti-semiticism, an illuminating essay on the merchant-adventurers, and a lucid exposition of the poetic development of William Wordsworth—and to compose with equal facility and equal skill.”

A body of content has therefore to be found which will be useful, not only for its own sake but also stimulate the student to acquire greater proficiency in communication. In other words, a way has to be found by which content and practice in these skills might be correlated. We recommend the practice that obtains at the foreign universities where courses of this type are taught, which have adopted the nature and history and operation of language as the content for these courses. Here is a body of content that is organically related to the development of verbal skills and out of which practice in the skills can be made natural and interesting. Apart from the intrinsic value of the knowledge gained from the study of such course, it provides an excellent field from which topics can be chosen for speaking and writing. As the student reads, writes, speaks, and listens, he will learn more about the nature; the power and the limitations of the tool he employs; and as he learns more about the tool, he will be better equipped to use it with greater skill. Care should be taken to see that the course is kept at an elementary level and prevented from becoming too difficult for our undergraduates. Only those aspects of language should be treated which have a direct bearing on the student's own communication problems and the treatment should be fairly elementary. Beginning with an examination on the form of words, the student should be gradually led to investigate how these forms are used—differently in different circumstances. In particular, he should be encouraged to analyse the language used by men in the profession which he intends to follow. This will help him to realise the vocational significance of the communication course, thus reinforcing his interest in it. From the usage of words, he may proceed to investigate the relation between symbols and meanings, between thinking and communicating. By constant use of concrete illustrations drawn from various fields, chiefly from the fields of national and international politics, insight can be developed in the logical principles of definition, the structure of analogies, types of fallacies and related topics. The development of the skills will be more enjoyable if the student is required to gather material for his themes from the life about him. The radio, the movies, the newspapers, represent areas of experience common to all students, about which they can be easily stimulated to think and write. Examination of the way in which these agencies operate and an attempt to train the student to analyse critically materials so communicated is important also from the point of view of the aims of General education. Mass communication represents an

ever-widening area of modern life ; it is important, indeed necessary, that our future citizens are trained to develop a critical approach to it. An attempt should also be made to integrate the course with the other courses wherever possible. All the courses involve work in reasoning and in critical evaluation of spoken and written material. Occasionally, the student may be required to submit papers on subject matter taught in the other courses, thus supplementing the work done in these areas. The main concern of the course should be : how to improve the writing, speaking, reading and listening of its students. The principle purpose of writing and speaking being to convey ideas clearly and effectively from one person to another, other matters subordinate to this main goal—the study of usage, grammar, mechanics, pronunciation etc.—should be treated only in so far as they contribute to the main goal of clear and effective communication.

The staff for teaching the course should include teachers not only from the language department or departments but also from other departments with senior teachers participating in it. The course is too big a task for one department alone. All departments collectively must take responsibility for it. Since all the communication skills have to be taught as different facets of a unified discipline, some of the teachers at least should be persons specially trained for the purpose. They should be firmly grounded in the development of language and be able to deal intelligently with problems in speech as well as in writing. An adequate knowledge of rhetorical principles and their development, of linguistic history, of phonetics and of semantics is essential. Since communication is a psychological process, it cannot be understood without reference to modern theories of psychology, and since it is also a social process, it has to be understood in terms of the milieu in which it operates. Besides, some knowledge of the pedagogical principles, of the approaches and methods of the professional educator is clearly necessary. To train such teachers, it would be necessary to establish a network of teacher-training programmes throughout the country.

While communication will be taught by persons specifically entrusted with this task, the rest of the staff have also a responsibility in the matter. If there is to be a carry-over of the communication skills into other courses, the teachers of these other courses must make up their minds to severely discourage all attempts at shoddy writing.

In the interests of efficient teaching of this course, we recommend that sections should be kept small and that adequate facilities be provided by way of auditory and visual devices and a separate library ade-

quately stocked with books relating to language and communication be set up for the students of the course.

Words are not the only medium of communication ; nor do they constitute the sole basis of thinking. Numerical concepts, quantitative relationships, and arithmetical processes permeate our day-to-day existence. General education should see that all learn how to deal with them in their simpler form and, with that end in view, provide instruction in elementary mathematics for all.

CHAPTER VI

Organisation and Financial Implications

General education programmes involve (i) the use of source materials in every field of study instead of textbooks or secondary materials, (ii) substitution to a large extent of discussions in the place of lectures, and (iii) inter-departmental cooperation on a large scale. It would be futile to seek to implement any programme of General education if these *conditio sine qua non* are not fulfilled ; and so we now propose to deal with the problems connected with these issues.

A. Reading Materials

To take away the student from involvement in textbooks and to introduce him direct to the great minds of the past and the present is one of the essential functions of a programme of this sort. But obviously an undergraduate cannot read all that has been written, by a succession of thinkers, poets and scientists, from Plato to Bertrand Russell, from Valmiki to Tagore and from Aristotle and Democritus to Einstein. Carefully selected readings have to be prepared and made available to the teachers as well as to the students of General education. Absence of such materials was one of the important causes of the failure of General education programmes in some of the Indian universities.

In American universities we have seen a great concern to prepare and make available such materials. In this connection we specially have to mention the excellent volumes which have been prepared by the Contemporary Civilization Staff of the Columbia College. These volumes contain chiefly material dealing with social sciences, but a very considerable portion of them deals also with philosophy, theology and natural sciences.

The points which struck us in relation to these volumes (i) Neither the classical writers, nor the contemporary writers are given exclusive attention. A balance is struck between the heritage of the past that has shaped the present, and the present, which is not at all fixed but fluid and ever-changing. (ii) The volumes, once prepared, are not taken as final and done with. There is continuous rethinking to separate the chaff from the grain, to lift out the core from the accidentals and to add things of importance which have been left out by oversight or error. (iii) The preparation of the volumes is the responsibility of the entire faculty devoted to the teaching of them. As every member of the faculty has earlier participated in the selection of the material, none of them can feel indifference or lack of interest in the teaching of that material.

One criticism, which we cannot but voice, is that to us these volumes of the Columbia College appeared to be too bulky in size and too weighty in matter to be grappled with adequately by an average student. Especially in India where such volumes are to be prepared for the first time, the persons in charge would do well to constantly keep in mind the capacities and equipment of the majority of students, for whom they are intended.

A plan of this kind, i.e. selections from the great writers of the past and present, would probably be not entirely suitable to all the subjects included in humanities, and the natural sciences. While such a scheme is feasible in philosophy; in literature, perhaps, whole books rather than selections have to be prescribed in many cases, if an impact of the desirable kind has to be made on the student. Thus, e.g., selections from Hamlet or Faustus would be inconceivable. Again, in the natural sciences the question how far a student would be benefited by being exposed to passages from *The Principia* or *The Origin of the Species* is a vexatious one.

Considering all these points we would like to make the following recommendations :—

1. Individual universities, or a group of two or more universities able to come to a common understanding, should undertake to prepare and make available the materials necessary for General education. While in social sciences and in humanities this may be achieved by careful compilations from selections of the great writers of the past and the present, in some of the sciences suitable textbooks, such as the "Introduction to Concepts and Theories in Physical Science" by Professor Holton of Harvard would have to be prepared. Some of the

masterpieces of literature and philosophy should be available in cheap editions, within the reach of the bulk of the students in India. The paper-backed editions of Great Books have been of help to a large extent in the General education programmes of the U.S.A.

2. Projects for the preparation, and translation where necessary, of the reading materials, should be adequately financed by the University Grants Commission and the State Governments. As a first step some universities with a limited number of students can make such materials available in mimeographs ; but ultimately students should be able to get them in print. Such publications would have to be subsidised.

3. Universities should have the freedom in the selection of the materials, and where two or more universities come together to prepare and publish such material, the endeavour should be cooperative in the full sense of the term, the faculties of each university taking full responsibility.

4. Every university should take care to see that those who are actually going to engage themselves in General education are entrusted with the preparation of the materials. As non-participation in discussions and decisions leading to the choice of materials produces lack of interest and concern on the part of those that are excluded, it is important that production of reading material should as far as possible be the result of collaboration of as many members of the faculties as possible. To this end, universities may pool their resources of men and materials, so that persons with wide interests and experience have the opportunity of helping universities other than their own.

5. In the preparation and prescription of reading materials, exclusive emphasis should not be placed either on the great books of the past, or on contemporary writings; or even on the writings of the men of a particular country or race. Students should be made to develop a sense of knowledge as an ever-growing organic whole, to which contributions have been made by all races and countries in the course of history; and they should be injected with a feeling of human unity and instilled with respect for all that has been achieved by Man.

B. Teaching Staff

One of the most important features of any General education programme should be the reduction in the number of lectures and increase in the number of discussion classes and tutorials. Equally important is the availability of teachers, who are able to transcend the limitations of their own specialisms and cut across the boundaries of the compart-

mentalised disciplines. Considering the vast numbers of students who are flocking to our universities and our paucity of resources in personnel and finance, this is going to be a formidable obstacle in the way of General education; but surmounted it must be if we are to make a success of General education, which should at the same time be universal.

We do not contemplate the formation of a special corps of teachers for the inculcation of General education; that would be a travesty of General education, making it into one more special study in addition to the many we have already. In every university and college there are bound to be at least a few men with broad interests, who are dissatisfied with being rigidly confined within their own subjects, and who have general acquaintance with more than one subject. It is a committee constituted of such men that should form the nucleus of General education in each university and college. As far as possible, such a committee should be representative of all fields of knowledge and age-groups, thus ensuring that not only enthusiasts, but men with a reputation in their own special subjects are associated with it. To develop a wide exchange of ideas among men interested in General education, to promote inter-disciplinary cooperation and to create interest even in those who are not imbued with the spirit of General education, we recommend that steps on the following lines be taken :

(a) Seminars on General education should be held as early as possible at different university centres in India, and teachers from the colleges and neighbouring universities intending to participate in General education programmes should be invited to attend them.

(b) The initiative for the organisation of such seminars should be taken by the Ministry of Education, and the University Grants Commission should make suitable financial grants to the universities, which are prepared to organise such seminars.

(c) University teachers who are already familiar with the problems of General education, and who have studied such schemes in other countries, should be invited to participate in these seminars, so that they are available for consultations and discussions.

C. Libraries, Laboratories and Teaching Aids

Successful carrying out of any scheme of General education depends upon the extension of library and laboratory facilities and availability of teaching aids. If all students in universities have to be introduced to the classics in literature and philosophy, several copies of each masterpiece should be available in the libraries, and thus libraries

have to be enormously expanded to meet this need. If appreciation of fine arts is to be imparted to all students, every university and college should possess reproductions of paintings, drawings, records of music, slides, etc. The social sciences would require charts, diagrams, exhibits, and grants to enable field work to be undertaken. Teaching of natural sciences to all students requires again an enormous extension of laboratory facilities and demonstration apparatus. Students should be encouraged to use the existing museums and art galleries, and new museums though on a modest scale have to be organised at various university 'centres on the model of the South Kensington Science Museum to bring home to all students the developments in science and their social implications.

If classroom teaching is not supplemented by these various teaching aids, libraries and laboratories, no headway can be made by any courses in General education, and the ends in view will remain unrealized.

D. Financial Implications

We have suggested in the earlier part of our report the various steps which the Government and Universities have to take if General education programmes are to be implemented. All of them involve spending money on a large scale. Many a good scheme has come to nought when confronted by lack of finances, while some schemes ill-financed and hastily put into operation have floundered. This would apply equally to the programmes envisaged in this report.

Recurring Expenditure : It is difficult to work out in detail a financial estimate, applicable to all schemes of General education. There is in fact no one scheme of General education. We have seen in American universities many varieties of General education programmes. Financial estimates vary from institution to institution depending upon the resources in men and materials already available, and the nature of the scheme sought to be implemented. However, it is possible to give a rough indication of the magnitude of the finances necessary, on the basis of certain assumption.

Taking a student body of 2,000 as a convenient unit, and assuming that one teacher to twenty students is the existing average teacher-pupil ratio, a hundred teachers would be required for their education. Since we have earlier made it clear that General education should constitute one-third of all collegiate education in content, there should be at least 30 teachers in charge of General education for every group of 2,000 students. But since it is not intended that teachers of General

education should lose touch with their special fields, and the implementation of General education involves reduction in the teaching hours of special subjects, it is estimated that in practice 15 additional teachers would be required for every 2,000 students, in case the teacher-pupil ratio is already 1 : 20. Taking the average salary of a teacher to be Rs. 400 per month in the grade Rs. 250-500 fixed by the Grants Commission, appointment of 15 additional teachers involves an annual expenditure of Rs. 72,000.

Usually, universities spend on laboratories, libraries and teaching aids a sum almost equivalent to the money spent on teaching personnel. So we may take it that for the extension of these facilities, a sum of Rs. 72,000 has to be spent annually for every 2,000 students, in addition to the present expenditure. Providing for a sum of Rs. 6,000 for contingencies, a General education programme for 2,000 students would involve a recurring additional annual expenditure of Rs. 1,50,000.

We may arrive at the finances involved in another way : at present, in most arts and science colleges the amount of money spent on the education of a student per annum is roughly Rs. 400 on the average. As we envisage General education to form one-third of total collegiate education, and as the introduction of General education would involve reduction of specialised education in suitable proportion, the amount of money actually required for the implementation of General education may be estimated as one-sixth of the total money spent on educating a student. This comes to about Rs. 70 per annum per student, in addition to the existing expenditure. For 2,000 students it would be Rs. 1,40,000 per year, in addition to what is being spent already.

Non-recurring Expenditure for Preparation of Materials : Preparation of reading materials at each university centre may easily take at least two years. While all teachers intending to participate in General education must collaborate in such a task, by the very nature of it, a programme like that requires the whole-time services of a requisite number of competent men. A non-recurring amount of rupees two lakhs seems to be a modest estimate for the successful culmination of such a programme. Once the reading materials are ready, the question of their publication would arise; and if they are published in bulk so as to be available at a cheap cost and if two or more universities pool their resources, the finances involved ought not to prove formidable. Even then the Government may have to subsidize their publication to some extent.

Non-recurring Expenditure for Libraries, Laboratories, etc. : While we have been able to provide a rough indication of the magnitude of the finances involved in meeting the requirements of the recurring expenditure for libraries, laboratories and teaching aids, we cannot prepare any sort of universally applicable estimate of the non-recurring expenditure needed to expand the existing laboratories and libraries in order that they may serve the cause of General education. Much depends upon what a university or a college has already, and the type and scope of the scheme it seeks to implement. Most educational institutions in India have no faculties of fine arts; some arts colleges have no science laboratories. If the principle that every college student should have some familiarity with humanities including fine arts, social sciences and natural sciences is accepted, then most colleges would have to start art galleries and libraries of music recordings and some colleges may have to establish laboratories for the first time. We have also indicated earlier the desirability of establishing museums. While we are not unaware of the colossal amounts of money needed for such a thing, we would like to urge the great need for the founding of such museums at least in some selected university centres. Finances required for such schemes cannot be estimated but each scheme will have to be considered on its merits.



CHAPTER VII

Summary of Recommendations

We recommend that courses in General education be introduced in all Indian Universities.

We have drawn up two schemes of General education—a main scheme that we ardently hope will be adopted sooner or later in all universities and an alternative scheme with which a beginning may be made almost immediately.

In the main scheme, we recommend that General education covering basic studies in the fields of (a) natural sciences, (b) social sciences and (c) humanities, together with training in communication skills be made compulsory for all undergraduates preparing for a degree in a non-professional faculty. Out of the total time available for all studies in the three years, one-third should be devoted to General

education courses. While the bulk of this programme should come in the first year, the rest may be distributed in the second and third years or may all come in the second year.

In the alternative scheme, we recommend that six periods per week in the first year and six periods per week in the second year of the degree course be devoted to General education courses.

Illustrative syllabuses are furnished in each of these areas. A certain quantum of General education, with suitable modifications where necessary, should be given to all students preparing for their first professional degrees also. Passing an examination in the prescribed General education courses should be made a required condition in the case of all students, before graduation.

Instruction in General education courses should be so organised that for every two lectures delivered, at least one discussion in small groups should be arranged.

Suitable reading material should be prepared by drawing freely upon source writings and the classics. Such projects should be adequately financed by the University Grants Commission and the Government.

Steps should be taken by which interest amongst a large number of teachers in the General education programmes is promoted as a result of which participation therein will be widely encouraged.

Expansion of libraries, laboratories and other teaching aids needed for the implementation of the programmes outlined should be provided for on a generous scale.

We envisage that in addition to the present expenditure, an approximate annual average recurring expenditure of Rs. 70/- per student per year will be required for putting the scheme of General education into operation and we recommend that financial aid on this scale be given to as many colleges and universities as are willing to adopt the measures suggested in our report.

Signed/-

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APPENDIX I

I discussed with members of the General Education Team some of the points which they might take into consideration in the study which they are undertaking of the problem of General education in India. The main points discussed are summarised below as an aide-memoire :

(1) The Team should study critically the working of General education courses in the various institutions of the U. S. A. and the U. K. in order to find out what approaches to the problem have proved most effective.

(2) In the light of the conditions prevailing in the Indian universities, they should suggest suitable approaches, which may be tried out in our country.

(3) They should formulate illustrative syllabuses and courses of lectures which may be introduced in our universities with due regard to the present curricular load and make practicable suggestions about the manner in which they might be produced. In doing this, care should be taken to see that these courses are not overloaded with mere informational items, as the object is not to provide a great deal of factual information but to develop broad interests and appreciation and healthy attitudes and to quicken the capacity for clear thinking. The method of work is, therefore, at least as important in this connection as the contents of the courses. Their proposals should include suggestions about the organisational set-up, as well as any additional personnel that may be required for the purpose.

(4) They should work out the approximate financial implications of their proposals with due regard to the limitations of financial resources under which the scheme will have to be implemented.

(5) They should suggest suitable methods for preparing reading materials for use in these courses and, for this purpose, collect, from the U. S. A. as well as the U. K., actual syllabi, books, mimeographed materials and other teaching aids which have been successfully used in their institutions.

(6) It seems advisable to study this whole problem in two allied

Contexts :

- (a) How far can the objective in view be achieved by the introduction of a basic course in General education which would include lectures, discussion groups, supervised general reading essay writing, art appreciation, etc. ?
- (b) To what extent is it possible to make suitable changes in the existing syllabi in the various subjects so as to bring about a certain amount of cross fertilization amongst them and to distil elements of general educational and cultural value from the study of each individual subject ? Thus, there is obviously a possibility of utilising the teaching of science more intelligently than is the case at present for cultivating a "scientific temper" in the students and giving them an insight into the history of science which has not merely technical but human significance. Similarly, the study of literature and humanities in general might serve as an introduction to developing an appreciation of "values", which are often left untouched by our teachers.

The introduction of a specific course in General education would certainly be a useful development, but the objective in view would not be fully achieved unless the attention of the universities is also invited to the desirability of adopting the approach suggested above and scrutinising their existing syllabuses accordingly.

(7) In view of the fact that this would be a new project and that the conditions in different universities would vary considerably, the Team would do well to suggest different methods and approaches suited to different conditions. In this connection, it might be useful to examine schemes like the introduction of Great Issue Courses (as in Dartmouth College) or the "Great Books Programme" or the broad "Survey Courses" in the field of humanities, social sciences and physical sciences.

(8) There is a possibility that some of the American universities might like to consult the members of the Team regarding the development of Indian and Oriental studies in their own institutions. It is to be hoped that the Team would be able to give useful advice to them in this behalf.

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Camp Aurangabad,
March 25, 1956.

APPENDIX II

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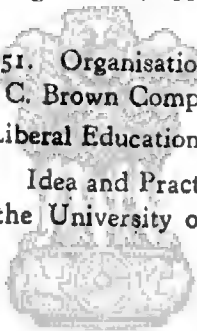
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